CITY OF REDLANDS

MASTER PLAN OF DRAINAGE (MPD)

RBF CONSULTING
A Baker Company

TECHNICAL APPENDIX A

Hydrology

CITY OF REDLANDS

MASTER PLAN OF DRAINAGE (MPD)

RBF CONSULTING
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TECHNICAL APPENDIX A.1

Rational Method – County Files (AMC II)
(100-, 25-, and 10-year)

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            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                           County of San Bernardino
                         Transportation Flood Control

                           Water Resources Division

--------------------------------------------------------------------------
  FILE NAME: LR0101ZZ.Z13
  TIME/DATE OF STUDY: 09:52 09/13/2004
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.2500

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)     (n)
===  =====  ========  =================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
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    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


**************************************************************************
  FLOW PROCESS FROM NODE LR010100.0 TO NODE LR010101.0 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   656.20
  ELEVATION DATA: UPSTREAM(FEET) =   2270.00  DOWNSTREAM(FEET) =   2242.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   17.766
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.594
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        5.28      0.86      1.00    46   17.77
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA RUNOFF(CFS) =      8.24
  TOTAL AREA(ACRES) =      5.28   PEAK FLOW RATE(CFS) =      8.24

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 8.67

**************************************************************************
  FLOW PROCESS FROM NODE LR010101.0 TO NODE LR010102.0 IS CODE =  63
--------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
==========================================================================
  UPSTREAM ELEVATION(FEET) = 2242.00  DOWNSTREAM ELEVATION(FEET) = 2225.00
  STREET LENGTH(FEET) =   366.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
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  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.71

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      11.13
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.34
    HALFSTREET FLOOD WIDTH(FEET) =   10.93
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.24
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.46
  STREET FLOW TRAVEL TIME(MIN.) =   1.44   Tc(MIN.) =  19.21
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.476
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        3.97      0.86      1.00    46
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =    3.97      SUBAREA RUNOFF(CFS) =    5.77
  EFFECTIVE AREA(ACRES) =      9.25    AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      9.25        PEAK FLOW RATE(CFS) =      13.45

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.56

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =  11.87
  FLOW VELOCITY(FEET/SEC.) =  4.41   DEPTH*VELOCITY(FT*FT/SEC.) =   1.60
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  10102.00 =  1022.70 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010102.0 TO NODE LR010103.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2225.00  DOWNSTREAM ELEVATION(FEET) = 2210.00
  STREET LENGTH(FEET) =   350.54   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.73

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      16.15
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.39
    HALFSTREET FLOOD WIDTH(FEET) =   12.96
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.49
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.73
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  STREET FLOW TRAVEL TIME(MIN.) =   1.30   Tc(MIN.) =  20.51
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.380
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        3.94      0.86      1.00    46
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =    3.94      SUBAREA RUNOFF(CFS) =    5.39
  EFFECTIVE AREA(ACRES) =     13.19    AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     13.19        PEAK FLOW RATE(CFS) =      18.05

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.40   HALFSTREET FLOOD WIDTH(FEET) =  13.59
  FLOW VELOCITY(FEET/SEC.) =  4.59   DEPTH*VELOCITY(FT*FT/SEC.) =   1.83
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  10103.00 =  1373.24 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010103.0 TO NODE LR010104.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2210.00  DOWNSTREAM ELEVATION(FEET) = 2195.00
  STREET LENGTH(FEET) =   288.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.69

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      20.43
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.40
    HALFSTREET FLOOD WIDTH(FEET) =   13.74
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.09
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.04
  STREET FLOW TRAVEL TIME(MIN.) =   0.94   Tc(MIN.) =  21.45
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.317
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        3.63      0.86      1.00    46
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =    3.63      SUBAREA RUNOFF(CFS) =    4.76
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  EFFECTIVE AREA(ACRES) =     16.82    AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     16.82        PEAK FLOW RATE(CFS) =      22.05

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.41   HALFSTREET FLOOD WIDTH(FEET) =  14.13
  FLOW VELOCITY(FEET/SEC.) =  5.21   DEPTH*VELOCITY(FT*FT/SEC.) =   2.13
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  10104.00 =  1661.74 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010104.0 TO NODE LR010105.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2195.00  DOWNSTREAM ELEVATION(FEET) = 2185.00
  STREET LENGTH(FEET) =   335.54   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.81

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      24.43
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.46
    HALFSTREET FLOOD WIDTH(FEET) =   16.48
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.31
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.97
  STREET FLOW TRAVEL TIME(MIN.) =   1.30   Tc(MIN.) =  22.75
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.237
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        3.84      0.86      1.00    46
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =    3.84      SUBAREA RUNOFF(CFS) =    4.76
  EFFECTIVE AREA(ACRES) =     20.66    AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     20.66        PEAK FLOW RATE(CFS) =      25.60

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.46   HALFSTREET FLOOD WIDTH(FEET) =  16.79
  FLOW VELOCITY(FEET/SEC.) =  4.36   DEPTH*VELOCITY(FT*FT/SEC.) =   2.01
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  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  10105.00 =  1997.28 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010105.0 TO NODE LR010106.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2185.00  DOWNSTREAM ELEVATION(FEET) = 2173.00
  STREET LENGTH(FEET) =   340.04   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.77

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      28.07
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.46
    HALFSTREET FLOOD WIDTH(FEET) =   16.79
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.78
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.21
  STREET FLOW TRAVEL TIME(MIN.) =   1.19   Tc(MIN.) =  23.94
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.170
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        4.19      0.86      1.00    46
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =    4.19      SUBAREA RUNOFF(CFS) =    4.94
  EFFECTIVE AREA(ACRES) =     24.85    AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     24.85        PEAK FLOW RATE(CFS) =      29.29

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.47   HALFSTREET FLOOD WIDTH(FEET) =  17.10
  FLOW VELOCITY(FEET/SEC.) =  4.81   DEPTH*VELOCITY(FT*FT/SEC.) =   2.25
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  10106.00 =  2337.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010106.0 TO NODE LR010107.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2173.00  DOWNSTREAM(FEET) =   2163.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   442.71   CHANNEL SLOPE =  0.0226
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  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     29.29
  FLOW VELOCITY(FEET/SEC.) =   2.08   FLOW DEPTH(FEET) =   0.53
  TRAVEL TIME(MIN.) =   3.55   Tc(MIN.) =  27.49
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  10107.00 =  2780.03 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010107.0 TO NODE LR010107.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  27.49
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.997
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        5.70      0.86      1.00    46
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =    5.70      SUBAREA RUNOFF(CFS) =    5.83
  EFFECTIVE AREA(ACRES) =     30.55   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     30.55       PEAK FLOW RATE(CFS) =      31.25

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR010107.0 TO NODE LR010108.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2163.00  DOWNSTREAM(FEET) =   2135.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   704.86   CHANNEL SLOPE =  0.0397
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     31.25
  FLOW VELOCITY(FEET/SEC.) =   2.59   FLOW DEPTH(FEET) =   0.49
  TRAVEL TIME(MIN.) =   4.53   Tc(MIN.) =  32.02
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  10108.00 =  3484.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010108.0 TO NODE LR010108.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  32.02
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.822
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A       10.49      0.86      1.00    46
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
```



```
  SUBAREA AREA(ACRES) =   10.49      SUBAREA RUNOFF(CFS) =    9.08
  EFFECTIVE AREA(ACRES) =     41.04   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     41.04       PEAK FLOW RATE(CFS) =      35.53

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR010108.0 TO NODE LR010109.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2135.00  DOWNSTREAM(FEET) =   2099.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   696.28   CHANNEL SLOPE =  0.0517
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     35.53
  FLOW VELOCITY(FEET/SEC.) =   2.95   FLOW DEPTH(FEET) =   0.49
  TRAVEL TIME(MIN.) =   3.94   Tc(MIN.) =  35.96
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  10109.00 =  4181.17 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010109.0 TO NODE LR010109.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  35.96
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.699
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A       10.72      0.86      1.00    46
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =   10.72      SUBAREA RUNOFF(CFS) =    8.10
  EFFECTIVE AREA(ACRES) =     51.76   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     51.76       PEAK FLOW RATE(CFS) =      39.10

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR010109.0 TO NODE LR010110.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2099.00  DOWNSTREAM(FEET) =   2056.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1252.31   CHANNEL SLOPE =  0.0343
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     39.10
  FLOW VELOCITY(FEET/SEC.) =   2.56   FLOW DEPTH(FEET) =   0.55
  TRAVEL TIME(MIN.) =   8.14   Tc(MIN.) =  44.10
```

```
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  10110.00 =  5433.48 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010110.0 TO NODE LR010110.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  44.10
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.504
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A       17.71      0.86      1.00    46
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =   17.71      SUBAREA RUNOFF(CFS) =   10.26
  EFFECTIVE AREA(ACRES) =     69.47   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     69.47       PEAK FLOW RATE(CFS) =      40.24

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =     69.47  TC(MIN.) =     44.10
  EFFECTIVE AREA(ACRES) =     69.47  AREA-AVERAGED Fm(INCH/HR)=  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  PEAK FLOW RATE(CFS)   =     40.24
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
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                          Analysis prepared by:

                           County of San Bernardino
                         Transportation Flood Control

                           Water Resources Division

--------------------------------------------------------------------------
  FILE NAME: LR0102ZZ.Z13
  TIME/DATE OF STUDY: 09:53 09/13/2004
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.2500

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  =================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
```



```
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


**************************************************************************
  FLOW PROCESS FROM NODE LR010200.0 TO NODE LR010201.0 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   646.58
  ELEVATION DATA: UPSTREAM(FEET) =   2060.00  DOWNSTREAM(FEET) =   2040.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   18.835
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.505
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        9.19      0.86      1.00    46   18.84
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA RUNOFF(CFS) =     13.61
  TOTAL AREA(ACRES) =      9.19   PEAK FLOW RATE(CFS) =     13.61

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

**************************************************************************
  FLOW PROCESS FROM NODE LR010201.0 TO NODE LR010202.0 IS CODE =  54
--------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2040.00  DOWNSTREAM(FEET) =   2030.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   330.73   CHANNEL SLOPE =  0.0302
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     13.61
  FLOW VELOCITY(FEET/SEC.) =   1.90   FLOW DEPTH(FEET) =   0.38
  TRAVEL TIME(MIN.) =   2.90   Tc(MIN.) =  21.74
  LONGEST FLOWPATH FROM NODE  10200.00 TO NODE  10202.00 =   977.31 FEET.

**************************************************************************
```

```
  FLOW PROCESS FROM NODE LR010202.0 TO NODE LR010202.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.74
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.299
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        5.78      0.86      1.00    46
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =    5.78      SUBAREA RUNOFF(CFS) =    7.48
  EFFECTIVE AREA(ACRES) =     14.97   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     14.97       PEAK FLOW RATE(CFS) =      19.38

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR010202.0 TO NODE LR010203.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2030.00  DOWNSTREAM(FEET) =   2021.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   552.98   CHANNEL SLOPE =  0.0163
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     19.38
  FLOW VELOCITY(FEET/SEC.) =   1.65   FLOW DEPTH(FEET) =   0.49
  TRAVEL TIME(MIN.) =   5.60   Tc(MIN.) =  27.34
  LONGEST FLOWPATH FROM NODE  10200.00 TO NODE  10203.00 =  1530.29 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010203.0 TO NODE LR010203.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  27.34
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.003
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        4.76      0.86      1.00    46
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =    4.76      SUBAREA RUNOFF(CFS) =    4.90
  EFFECTIVE AREA(ACRES) =     19.73   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     19.73       PEAK FLOW RATE(CFS) =      20.30

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR010203.0 TO NODE LR010204.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2021.00  DOWNSTREAM(FEET) =   2000.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   449.80   CHANNEL SLOPE =  0.0467
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     20.30
  FLOW VELOCITY(FEET/SEC.) =   2.45   FLOW DEPTH(FEET) =   0.41
  TRAVEL TIME(MIN.) =   3.06   Tc(MIN.) =  30.40
  LONGEST FLOWPATH FROM NODE  10200.00 TO NODE  10204.00 =  1980.09 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010204.0 TO NODE LR010204.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  30.40
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.880
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        8.23      0.86      1.00    46
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =    8.23      SUBAREA RUNOFF(CFS) =    7.55
  EFFECTIVE AREA(ACRES) =     27.96   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     27.96       PEAK FLOW RATE(CFS) =      25.66

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =     27.96  TC(MIN.) =     30.40
  EFFECTIVE AREA(ACRES) =     27.96  AREA-AVERAGED Fm(INCH/HR)=  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  PEAK FLOW RATE(CFS)   =     25.66
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                           County of San Bernardino
                         Transportation Flood Control

                          Water Resources Division

 ------------------------------------------------------------------------
   FILE NAME: LR0103ZZ.Z13
   TIME/DATE OF STUDY: 09:57 09/13/2004
 ========================================================================
   USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
 ========================================================================
                      --*TIME-OF-CONCENTRATION MODEL*--

   USER SPECIFIED STORM EVENT(YEAR) =  100.00
   SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
   SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
   *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

   SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
   USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.2500

   *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

   *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
      HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
      WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
 NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
 ===  =====  ========  =================  ======  =====  ====  =====  =======
   1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
   2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
   3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
   4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
   5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
   6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
   7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
   8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
   9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180

   GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
```



```
     1. Relative Flow-Depth =  0.20 FEET
        as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
     2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
   *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
    OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
   *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

   UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
     WATERSHED LAG = 0.80 * Tc
     USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
     1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
     FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
     PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
     SIERRA MADRE DEPTH-AREA FACTORS USED.
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


 ************************************************************************
   FLOW PROCESS FROM NODE LR010300.0 TO NODE LR010301.0 IS CODE =  21
 ------------------------------------------------------------------------
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
 ========================================================================
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   759.51
   ELEVATION DATA: UPSTREAM(FEET) =   2005.00  DOWNSTREAM(FEET) =   1985.00

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   20.745
   * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.364
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
   NATURAL FAIR COVER
   "OPEN BRUSH"                A        9.83      0.86      1.00    46   20.75
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
   SUBAREA RUNOFF(CFS) =     13.31
   TOTAL AREA(ACRES) =      9.83   PEAK FLOW RATE(CFS) =     13.31

   SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
   5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.53; 6HR = 2.22; 24HR = 4.65

 ************************************************************************
   FLOW PROCESS FROM NODE LR010301.0 TO NODE LR010302.0 IS CODE =  54
 ------------------------------------------------------------------------
   >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
   >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
 ========================================================================
   ELEVATION DATA: UPSTREAM(FEET) =   1985.00  DOWNSTREAM(FEET) =   1960.00
   CHANNEL LENGTH THRU SUBAREA(FEET) =   549.34   CHANNEL SLOPE =  0.0455
   CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
   MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
   CHANNEL FLOW THRU SUBAREA(CFS) =     13.31
   FLOW VELOCITY(FEET/SEC.) =   2.20   FLOW DEPTH(FEET) =   0.35
   TRAVEL TIME(MIN.) =   4.17   Tc(MIN.) =  24.91
   LONGEST FLOWPATH FROM NODE  10300.00 TO NODE  10302.00 =  1308.85 FEET.

 ************************************************************************
```

```
  FLOW PROCESS FROM NODE LR010302.0 TO NODE LR010302.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  24.91
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.118
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        9.20      0.86      1.00    46
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =    9.20      SUBAREA RUNOFF(CFS) =   10.42
  EFFECTIVE AREA(ACRES) =     19.03   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     19.03       PEAK FLOW RATE(CFS) =      21.55

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR010302.0 TO NODE LR010303.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1960.00  DOWNSTREAM(FEET) =   1942.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   429.95   CHANNEL SLOPE =  0.0419
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     21.55
  FLOW VELOCITY(FEET/SEC.) =   2.39   FLOW DEPTH(FEET) =   0.42
  TRAVEL TIME(MIN.) =   2.99   Tc(MIN.) =  27.91
  LONGEST FLOWPATH FROM NODE  10300.00 TO NODE  10303.00 =  1738.80 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010303.0 TO NODE LR010303.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  27.91
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.979
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A       12.70      0.86      1.00    46
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =   12.70      SUBAREA RUNOFF(CFS) =   12.79
  EFFECTIVE AREA(ACRES) =     31.73   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     31.73       PEAK FLOW RATE(CFS) =      31.94

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR010303.0 TO NODE LR010304.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1942.00  DOWNSTREAM(FEET) =   1924.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   553.03   CHANNEL SLOPE =  0.0325
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     31.94
  FLOW VELOCITY(FEET/SEC.) =   2.42   FLOW DEPTH(FEET) =   0.51
  TRAVEL TIME(MIN.) =   3.81   Tc(MIN.) =  31.72
  LONGEST FLOWPATH FROM NODE  10300.00 TO NODE  10304.00 =  2291.83 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010304.0 TO NODE LR010304.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  31.72
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.832
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A       19.60      0.86      1.00    46
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.90      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.98
  SUBAREA AREA(ACRES) =   20.50      SUBAREA RUNOFF(CFS) =   18.16
  EFFECTIVE AREA(ACRES) =     52.23   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =     52.23       PEAK FLOW RATE(CFS) =      45.93

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.23; 6HR = 3.21; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR010304.0 TO NODE LR010305.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1924.00  DOWNSTREAM(FEET) =   1890.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   851.00   CHANNEL SLOPE =  0.0400
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     45.93
  FLOW VELOCITY(FEET/SEC.) =   2.85   FLOW DEPTH(FEET) =   0.57
  TRAVEL TIME(MIN.) =   4.97   Tc(MIN.) =  36.69
  LONGEST FLOWPATH FROM NODE  10300.00 TO NODE  10305.00 =  3142.83 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010305.0 TO NODE LR010305.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
```

```
================================================================================
  MAINLINE Tc(MIN) =  36.69
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.679
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A       37.64      0.86      1.00    46
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        2.29      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.98
  SUBAREA AREA(ACRES) =   39.93      SUBAREA RUNOFF(CFS) =   30.00
  EFFECTIVE AREA(ACRES) =     92.16   AREA-AVERAGED Fm(INCH/HR) =  0.85
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =     92.16       PEAK FLOW RATE(CFS) =      68.72

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.06; 6HR = 2.83; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR010305.0 TO NODE LR010306.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1890.00  DOWNSTREAM(FEET) =   1875.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   443.54   CHANNEL SLOPE =  0.0338
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     68.72
  FLOW VELOCITY(FEET/SEC.) =   2.96   FLOW DEPTH(FEET) =   0.68
  TRAVEL TIME(MIN.) =   2.50   Tc(MIN.) =  39.19
  LONGEST FLOWPATH FROM NODE  10300.00 TO NODE  10306.00 =  3586.37 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010306.0 TO NODE LR010306.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  39.19
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.614
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A       18.49      0.86      1.00    46
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.69      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.99
  SUBAREA AREA(ACRES) =   19.18      SUBAREA RUNOFF(CFS) =   13.18
  EFFECTIVE AREA(ACRES) =    111.34   AREA-AVERAGED Fm(INCH/HR) =  0.85
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    111.34       PEAK FLOW RATE(CFS) =      76.50

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR010306.0 TO NODE LR010307.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1875.00  DOWNSTREAM(FEET) =   1863.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   550.37   CHANNEL SLOPE =  0.0218
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     76.50
  FLOW VELOCITY(FEET/SEC.) =   2.60   FLOW DEPTH(FEET) =   0.77
  TRAVEL TIME(MIN.) =   3.53   Tc(MIN.) =  42.73
  LONGEST FLOWPATH FROM NODE  10300.00 TO NODE  10307.00 =  4136.74 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010307.0 TO NODE LR010307.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  42.73
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.532
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A       14.75      0.86      1.00    46
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =   14.75      SUBAREA RUNOFF(CFS) =    8.93
  EFFECTIVE AREA(ACRES) =    126.09   AREA-AVERAGED Fm(INCH/HR) =  0.85
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    126.09       PEAK FLOW RATE(CFS) =      77.27

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =    126.09  TC(MIN.) =     42.73
  EFFECTIVE AREA(ACRES) =    126.09  AREA-AVERAGED Fm(INCH/HR)=  0.85
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  0.99
  PEAK FLOW RATE(CFS)   =     77.27
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                           County of San Bernardino
                         Transportation Flood Control

                           Water Resources Division

--------------------------------------------------------------------------
  FILE NAME: LR0104ZZ.Z13
  TIME/DATE OF STUDY: 10:38 09/13/2004
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                     --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.2500

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)     (n)
===  =====  ========  =================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
```



```
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


**************************************************************************
  FLOW PROCESS FROM NODE LR010400.0 TO NODE LR010401.0 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   828.35
  ELEVATION DATA: UPSTREAM(FEET) =   1860.00  DOWNSTREAM(FEET) =   1818.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   18.840
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.505
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        8.78      0.86      1.00    46   18.84
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA RUNOFF(CFS) =     13.00
  TOTAL AREA(ACRES) =      8.78   PEAK FLOW RATE(CFS) =     13.00

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.98

**************************************************************************
  FLOW PROCESS FROM NODE LR010401.0 TO NODE LR010402.0 IS CODE =  54
--------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1818.00  DOWNSTREAM(FEET) =   1793.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   735.56   CHANNEL SLOPE =  0.0340
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     13.00
  FLOW VELOCITY(FEET/SEC.) =   1.97   FLOW DEPTH(FEET) =   0.36
  TRAVEL TIME(MIN.) =   6.23   Tc(MIN.) =  25.07
  LONGEST FLOWPATH FROM NODE  10400.00 TO NODE  10402.00 =  1563.91 FEET.

**************************************************************************
```

```
  FLOW PROCESS FROM NODE LR010402.0 TO NODE LR010402.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  25.07
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.110
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A       11.93      0.86      1.00    46
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =   11.93      SUBAREA RUNOFF(CFS) =   13.42
  EFFECTIVE AREA(ACRES) =     20.71   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     20.71       PEAK FLOW RATE(CFS) =      23.30

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR010402.0 TO NODE LR010403.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1793.00  DOWNSTREAM(FEET) =   1773.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   480.31   CHANNEL SLOPE =  0.0416
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     23.30
  FLOW VELOCITY(FEET/SEC.) =   2.43   FLOW DEPTH(FEET) =   0.44
  TRAVEL TIME(MIN.) =   3.29   Tc(MIN.) =  28.36
  LONGEST FLOWPATH FROM NODE  10400.00 TO NODE  10403.00 =  2044.22 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010403.0 TO NODE LR010403.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  28.36
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.960
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        9.28      0.86      1.00    46
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =    9.28      SUBAREA RUNOFF(CFS) =    9.18
  EFFECTIVE AREA(ACRES) =     29.99   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     29.99       PEAK FLOW RATE(CFS) =      29.68

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR010403.0 TO NODE LR010404.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1773.00  DOWNSTREAM(FEET) =   1753.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   469.46   CHANNEL SLOPE =  0.0426
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     29.68
  FLOW VELOCITY(FEET/SEC.) =   2.62   FLOW DEPTH(FEET) =   0.48
  TRAVEL TIME(MIN.) =   2.98   Tc(MIN.) =  31.34
  LONGEST FLOWPATH FROM NODE  10400.00 TO NODE  10404.00 =  2513.68 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010404.0 TO NODE LR010404.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  31.34
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.846
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        9.33      0.86      1.00    46
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =    9.33      SUBAREA RUNOFF(CFS) =    8.28
  EFFECTIVE AREA(ACRES) =     39.32   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     39.32       PEAK FLOW RATE(CFS) =      34.88

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR010404.0 TO NODE LR010405.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1753.00  DOWNSTREAM(FEET) =   1726.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   650.38   CHANNEL SLOPE =  0.0415
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     34.88
  FLOW VELOCITY(FEET/SEC.) =   2.70   FLOW DEPTH(FEET) =   0.51
  TRAVEL TIME(MIN.) =   4.02   Tc(MIN.) =  35.36
  LONGEST FLOWPATH FROM NODE  10400.00 TO NODE  10405.00 =  3164.06 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010405.0 TO NODE LR010405.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  35.36
```

```
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.717
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               A       16.37      0.86      1.00    46
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =   16.37      SUBAREA RUNOFF(CFS) =   12.62
 EFFECTIVE AREA(ACRES) =     55.69   AREA-AVERAGED Fm(INCH/HR) =  0.86
 AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     55.69       PEAK FLOW RATE(CFS) =      42.94

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
 FLOW PROCESS FROM NODE LR010405.0 TO NODE LR010406.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1726.00  DOWNSTREAM(FEET) =   1710.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   615.88   CHANNEL SLOPE =  0.0260
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
 MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
 CHANNEL FLOW THRU SUBAREA(CFS) =     42.94
 FLOW VELOCITY(FEET/SEC.) =   2.39   FLOW DEPTH(FEET) =   0.60
 TRAVEL TIME(MIN.) =   4.30   Tc(MIN.) =  39.66
 LONGEST FLOWPATH FROM NODE  10400.00 TO NODE  10406.00 =  3779.94 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR010406.0 TO NODE LR010406.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  39.66
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.602
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               A       17.25      0.86      1.00    46
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
 SUBAREA AREA(ACRES) =   17.25      SUBAREA RUNOFF(CFS) =   11.53
 EFFECTIVE AREA(ACRES) =     72.94   AREA-AVERAGED Fm(INCH/HR) =  0.86
 AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     72.94       PEAK FLOW RATE(CFS) =      48.74

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
 FLOW PROCESS FROM NODE LR010406.0 TO NODE LR010407.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
```



```
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1710.00  DOWNSTREAM(FEET) =   1687.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   591.31   CHANNEL SLOPE =  0.0389
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  75.000
 MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
 CHANNEL FLOW THRU SUBAREA(CFS) =     48.74
 FLOW VELOCITY(FEET/SEC.) =   2.59   FLOW DEPTH(FEET) =   0.50
 TRAVEL TIME(MIN.) =   3.80   Tc(MIN.) =  43.46
 LONGEST FLOWPATH FROM NODE  10400.00 TO NODE  10407.00 =  4371.25 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR010407.0 TO NODE LR010407.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  43.46
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.517
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               A       14.87      0.86      1.00    46
 PUBLIC PARK                A        3.24      0.98      0.85    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.88
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.97
 SUBAREA AREA(ACRES) =   18.11      SUBAREA RUNOFF(CFS) =   10.80
 EFFECTIVE AREA(ACRES) =     91.05   AREA-AVERAGED Fm(INCH/HR) =  0.86
 AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  0.99
 TOTAL AREA(ACRES) =     91.05       PEAK FLOW RATE(CFS) =      53.92

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
 FLOW PROCESS FROM NODE LR010407.0 TO NODE LR010408.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1687.00  DOWNSTREAM(FEET) =   1665.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   835.50   CHANNEL SLOPE =  0.0263
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  75.000
 MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
 CHANNEL FLOW THRU SUBAREA(CFS) =     53.92
 FLOW VELOCITY(FEET/SEC.) =   2.29   FLOW DEPTH(FEET) =   0.56
 TRAVEL TIME(MIN.) =   6.07   Tc(MIN.) =  49.53
 LONGEST FLOWPATH FROM NODE  10400.00 TO NODE  10408.00 =  5206.75 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR010408.0 TO NODE LR010408.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  49.53
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.402
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        4.54      0.86      1.00    46
  PUBLIC PARK                 A       15.25      0.98      0.85    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.95
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.88
  SUBAREA AREA(ACRES) =   19.79      SUBAREA RUNOFF(CFS) =   10.09
  EFFECTIVE AREA(ACRES) =    110.84   AREA-AVERAGED Fm(INCH/HR) =  0.85
  AREA-AVERAGED Fp(INCH/HR) =  0.88  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    110.84       PEAK FLOW RATE(CFS) =      54.63

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR010408.0 TO NODE LR010409.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1665.00  DOWNSTREAM(FEET) =   1620.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1131.10   CHANNEL SLOPE =  0.0398
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  30.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     54.63
  FLOW VELOCITY(FEET/SEC.) =   3.37   FLOW DEPTH(FEET) =   0.74
  TRAVEL TIME(MIN.) =   5.60   Tc(MIN.) =  55.13
  LONGEST FLOWPATH FROM NODE  10400.00 TO NODE  10409.00 =  6337.85 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010409.0 TO NODE LR010409.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  55.13
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.315
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                A       12.14      0.86      1.00    46
  PUBLIC PARK                 A       21.33      0.98      0.85    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.93
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.90
  SUBAREA AREA(ACRES) =   33.47      SUBAREA RUNOFF(CFS) =   14.31
  EFFECTIVE AREA(ACRES) =    144.31   AREA-AVERAGED Fm(INCH/HR) =  0.85
  AREA-AVERAGED Fp(INCH/HR) =  0.89  AREA-AVERAGED Ap =  0.96
  TOTAL AREA(ACRES) =    144.31       PEAK FLOW RATE(CFS) =      60.24

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR010409.0 TO NODE LR010410.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1620.00  DOWNSTREAM(FEET) =   1580.00
```



```
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1622.08   CHANNEL SLOPE =  0.0247
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  20.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     60.24
  FLOW VELOCITY(FEET/SEC.) =   3.19   FLOW DEPTH(FEET) =   0.97
  TRAVEL TIME(MIN.) =   8.48   Tc(MIN.) =  63.60
  LONGEST FLOWPATH FROM NODE  10400.00 TO NODE  10410.00 =  7959.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010410.0 TO NODE LR010410.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  63.60
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.207
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                A       29.91      0.86      1.00    46
  PUBLIC PARK                 A       12.31      0.98      0.85    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.89
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.96
  SUBAREA AREA(ACRES) =   42.22      SUBAREA RUNOFF(CFS) =   13.53
  EFFECTIVE AREA(ACRES) =    186.53   AREA-AVERAGED Fm(INCH/HR) =  0.85
  AREA-AVERAGED Fp(INCH/HR) =  0.89  AREA-AVERAGED Ap =  0.96
  TOTAL AREA(ACRES) =    186.53       PEAK FLOW RATE(CFS) =      60.24
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =    186.53  TC(MIN.) =     63.60
  EFFECTIVE AREA(ACRES) =    186.53  AREA-AVERAGED Fm(INCH/HR)=  0.85
  AREA-AVERAGED Fp(INCH/HR) =  0.89  AREA-AVERAGED Ap =  0.96
  PEAK FLOW RATE(CFS)   =     60.24
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
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                          Analysis prepared by:

                           County of San Bernardino
                         Transportation Flood Control

                          Water Resources Division

--------------------------------------------------------------------------
  FILE NAME: LR0105ZZ.Z13
  TIME/DATE OF STUDY: 10:38 09/13/2004
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.2500

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)     (n)
===  =====  ========  =================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
```



```
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


**************************************************************************
  FLOW PROCESS FROM NODE LR010500.0 TO NODE LR010501.0 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   849.43
  ELEVATION DATA: UPSTREAM(FEET) =   1880.00  DOWNSTREAM(FEET) =   1878.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   20.520
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.380
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        5.34      0.86      1.00    46   35.16
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        A        0.62      0.98      0.60    32   20.52
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.87
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.96
  SUBAREA RUNOFF(CFS) =      8.30
  TOTAL AREA(ACRES) =      5.96   PEAK FLOW RATE(CFS) =      8.30

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

**************************************************************************
  FLOW PROCESS FROM NODE LR010501.0 TO NODE LR010502.0 IS CODE =  54
--------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1878.00  DOWNSTREAM(FEET) =   1868.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   586.30   CHANNEL SLOPE =  0.0171
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      8.30
  FLOW VELOCITY(FEET/SEC.) =   1.37   FLOW DEPTH(FEET) =   0.35
  TRAVEL TIME(MIN.) =   7.13   Tc(MIN.) =  27.65
  LONGEST FLOWPATH FROM NODE  10500.00 TO NODE  10502.00 =  1435.73 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR010502.0 TO NODE LR010502.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  27.65
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.990
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        5.15      0.86      1.00    46
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =    5.15      SUBAREA RUNOFF(CFS) =    5.24
  EFFECTIVE AREA(ACRES) =     11.11   AREA-AVERAGED Fm(INCH/HR) =  0.84
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =     11.11       PEAK FLOW RATE(CFS) =      11.45

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR010502.0 TO NODE LR010503.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1868.00  DOWNSTREAM(FEET) =   1850.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   431.55   CHANNEL SLOPE =  0.0417
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     11.45
  FLOW VELOCITY(FEET/SEC.) =   2.07   FLOW DEPTH(FEET) =   0.33
  TRAVEL TIME(MIN.) =   3.48   Tc(MIN.) =  31.13
  LONGEST FLOWPATH FROM NODE  10500.00 TO NODE  10503.00 =  1867.28 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010503.0 TO NODE LR010503.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  31.13
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.853
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A       15.29      0.86      1.00    46
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.84      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.98
  SUBAREA AREA(ACRES) =   16.13      SUBAREA RUNOFF(CFS) =   14.63
  EFFECTIVE AREA(ACRES) =     27.24   AREA-AVERAGED Fm(INCH/HR) =  0.85
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =     27.24       PEAK FLOW RATE(CFS) =      24.71
```



```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR010503.0 TO NODE LR010504.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1850.00  DOWNSTREAM(FEET) =   1835.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   418.00   CHANNEL SLOPE =  0.0359
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     24.71
  FLOW VELOCITY(FEET/SEC.) =   2.33   FLOW DEPTH(FEET) =   0.46
  TRAVEL TIME(MIN.) =   2.99   Tc(MIN.) =  34.12
  LONGEST FLOWPATH FROM NODE  10500.00 TO NODE  10504.00 =  2285.28 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010504.0 TO NODE LR010504.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  34.12
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.754
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A       15.52      0.86      1.00    46
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.80      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.98
  SUBAREA AREA(ACRES) =   16.32      SUBAREA RUNOFF(CFS) =   13.33
  EFFECTIVE AREA(ACRES) =     43.56   AREA-AVERAGED Fm(INCH/HR) =  0.85
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =     43.56       PEAK FLOW RATE(CFS) =      35.60

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.67

****************************************************************************
  FLOW PROCESS FROM NODE LR010504.0 TO NODE LR010505.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1835.00  DOWNSTREAM(FEET) =   1815.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   671.56   CHANNEL SLOPE =  0.0298
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     35.60
  FLOW VELOCITY(FEET/SEC.) =   2.40   FLOW DEPTH(FEET) =   0.54
  TRAVEL TIME(MIN.) =   4.66   Tc(MIN.) =  38.78
  LONGEST FLOWPATH FROM NODE  10500.00 TO NODE  10505.00 =  2956.84 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR010505.0 TO NODE LR010505.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  38.78
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.624
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A       25.05      0.86      1.00    46
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.15      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.98
  SUBAREA AREA(ACRES) =   26.20      SUBAREA RUNOFF(CFS) =   18.30
  EFFECTIVE AREA(ACRES) =     69.76   AREA-AVERAGED Fm(INCH/HR) =  0.85
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =     69.76       PEAK FLOW RATE(CFS) =      48.82

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR010505.0 TO NODE LR010506.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1815.00  DOWNSTREAM(FEET) =   1792.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   650.64   CHANNEL SLOPE =  0.0353
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     48.82
  FLOW VELOCITY(FEET/SEC.) =   2.78   FLOW DEPTH(FEET) =   0.59
  TRAVEL TIME(MIN.) =   3.90   Tc(MIN.) =  42.67
  LONGEST FLOWPATH FROM NODE  10500.00 TO NODE  10506.00 =  3607.48 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010506.0 TO NODE LR010506.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  42.67
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.534
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A       20.76      0.86      1.00    46
  COMMERCIAL                 A        0.75      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.73      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.87
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.94
  SUBAREA AREA(ACRES) =   23.24      SUBAREA RUNOFF(CFS) =   15.03
  EFFECTIVE AREA(ACRES) =     93.00   AREA-AVERAGED Fm(INCH/HR) =  0.84
```



```
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =     93.00       PEAK FLOW RATE(CFS) =      58.16

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR010506.0 TO NODE LR010507.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1792.00  DOWNSTREAM(FEET) =   1765.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   726.03   CHANNEL SLOPE =  0.0372
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     58.16
  FLOW VELOCITY(FEET/SEC.) =   2.95   FLOW DEPTH(FEET) =   0.63
  TRAVEL TIME(MIN.) =   4.11   Tc(MIN.) =  46.78
  LONGEST FLOWPATH FROM NODE  10500.00 TO NODE  10507.00 =  4333.51 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010507.0 TO NODE LR010507.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  46.78
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.451
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        2.43      0.86      1.00    46
  COMMERCIAL                 A       22.73      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.79      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.92
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.20
  SUBAREA AREA(ACRES) =   25.95      SUBAREA RUNOFF(CFS) =   29.60
  EFFECTIVE AREA(ACRES) =    118.95   AREA-AVERAGED Fm(INCH/HR) =  0.70
  AREA-AVERAGED Fp(INCH/HR) =  0.87  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =    118.95       PEAK FLOW RATE(CFS) =      80.88

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR010507.0 TO NODE LR010508.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1765.00  DOWNSTREAM(FEET) =   1740.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   481.59   CHANNEL SLOPE =  0.0519
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     80.88
  FLOW VELOCITY(FEET/SEC.) =   3.62   FLOW DEPTH(FEET) =   0.67
```

```
  TRAVEL TIME(MIN.) =   2.22   Tc(MIN.) =  49.00
  LONGEST FLOWPATH FROM NODE  10500.00 TO NODE  10508.00 =  4815.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010508.0 TO NODE LR010508.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  49.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.411
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 A       21.75      0.98      0.10    32
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 A        0.49      0.88      1.00    44
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.52      0.98      0.60    32
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        0.21      0.86      1.00    46
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.96
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.16
  SUBAREA AREA(ACRES) =   23.97      SUBAREA RUNOFF(CFS) =   27.19
  EFFECTIVE AREA(ACRES) =    142.92   AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.87  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =    142.92       PEAK FLOW RATE(CFS) =     103.81

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR010508.0 TO NODE LR010509.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1740.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1735.00
  FLOW LENGTH(FEET) =   143.12   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  25.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.73
  PIPE-FLOW(CFS) =    103.81
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =  49.12
  LONGEST FLOWPATH FROM NODE  10500.00 TO NODE  10509.00 =  4958.22 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010509.0 TO NODE LR010510.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1735.00  DOWNSTREAM ELEVATION(FEET) = 1720.00
  STREET LENGTH(FEET) =   760.94   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00
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  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.96

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     103.81
    ***STREET FLOW SPLITS OVER STREET-CROWN***
    FULL DEPTH(FEET) =    0.80   FLOOD WIDTH(FEET) =   38.58
    FULL HALF-STREET VELOCITY(FEET/SEC.) =    5.26
    SPLIT DEPTH(FEET) =    0.75   SPLIT FLOOD WIDTH(FEET) =   33.97
    SPLIT FLOW(CFS) =   46.66   SPLIT VELOCITY(FEET/SEC.) =    5.08
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.80
    HALFSTREET FLOOD WIDTH(FEET) =   38.58
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.26
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.20
  STREET FLOW TRAVEL TIME(MIN.) =   2.41   Tc(MIN.) =  51.53
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.369
  SUBAREA AREA(ACRES) =    0.00      SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =    142.92    AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.87  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =    142.92        PEAK FLOW RATE(CFS) =     103.81
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.36; 6HR = 1.90; 24HR = 4.00

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.80   HALFSTREET FLOOD WIDTH(FEET) =  38.58
  FLOW VELOCITY(FEET/SEC.) =  5.26   DEPTH*VELOCITY(FT*FT/SEC.) =   4.20
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  31.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.68
  PIPE-FLOW(CFS) =    103.81
  PIPEFLOW TRAVEL TIME(MIN.) =   0.86    Tc(MIN.) =  49.99
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.395
  SUBAREA AREA(ACRES) =    0.00      SUBAREA RUNOFF(CFS) =    0.00
  TOTAL AREA(ACRES) =    142.92        PEAK FLOW RATE(CFS) =    103.81
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.36; 6HR = 1.90; 24HR = 4.00

  *NOTE: ESTIMATED PEAK FLOW DEFAULTED TO UPSTREAM PEAK FLOW;
         STREET HYDRAULICS NOT COMPUTED*
  LONGEST FLOWPATH FROM NODE  10500.00 TO NODE  10510.00 =  5719.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010510.0 TO NODE LR010511.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
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==========================================================================
  UPSTREAM ELEVATION(FEET) = 1720.00  DOWNSTREAM ELEVATION(FEET) = 1675.00
  STREET LENGTH(FEET) =  2077.22   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     140.02
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.78
    HALFSTREET FLOOD WIDTH(FEET) =   32.17
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.53
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.12
  STREET FLOW TRAVEL TIME(MIN.) =   5.30   Tc(MIN.) =  55.29
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.313
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       81.84      0.98      0.60    32
  MOBILE HOME PARK           A       12.29      0.98      0.25    32
  MOBILE HOME PARK           B        2.67      0.75      0.25    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.19      0.75      0.60    56
  SCHOOL                     A        2.03      0.98      0.60    32
  COMMERCIAL                 A        1.13      0.98      0.10    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.54
  SUBAREA AREA(ACRES) =  102.15      SUBAREA RUNOFF(CFS) =   72.41
  EFFECTIVE AREA(ACRES) =    245.07    AREA-AVERAGED Fm(INCH/HR) =  0.57
  AREA-AVERAGED Fp(INCH/HR) =  0.91  AREA-AVERAGED Ap =  0.63
  TOTAL AREA(ACRES) =    245.07        PEAK FLOW RATE(CFS) =     163.54

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.62; 1HR = 0.82; 3HR = 1.37; 6HR = 1.90; 24HR = 4.00

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.82   HALFSTREET FLOOD WIDTH(FEET) =  34.25
  FLOW VELOCITY(FEET/SEC.) =  6.76   DEPTH*VELOCITY(FT*FT/SEC.) =   5.58

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.70
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  29.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.34
  PIPE-FLOW(CFS) =    103.81
  PIPEFLOW TRAVEL TIME(MIN.) =   2.26    Tc(MIN.) =  52.24
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  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.358
  SUBAREA AREA(ACRES) =  102.15      SUBAREA RUNOFF(CFS) =   76.58
  TOTAL AREA(ACRES) =    245.07        PEAK FLOW RATE(CFS) =    173.55

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.62; 1HR = 0.82; 3HR = 1.37; 6HR = 1.90; 24HR = 4.00
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   69.74
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.63
    HALFSTREET FLOOD WIDTH(FEET) =   24.55
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.46
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.44
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  2077.2 FT WITH ELEVATION-DROP =  45.0 FT, IS  228.2 CFS,
         WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  10511.00
  LONGEST FLOWPATH FROM NODE  10500.00 TO NODE  10511.00 =  7796.38 FEET.

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  FLOW PROCESS FROM NODE LR010511.0 TO NODE LR010512.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1675.00  DOWNSTREAM ELEVATION(FEET) = 1620.00
  STREET LENGTH(FEET) =  1732.03   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.79

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     209.25
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.84
    HALFSTREET FLOOD WIDTH(FEET) =   34.98
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.30
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.97
  STREET FLOW TRAVEL TIME(MIN.) =   3.48   Tc(MIN.) =  55.72
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.307
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       77.30      0.98      0.60    32
  MOBILE HOME PARK           A       17.32      0.98      0.25    32
  COMMERCIAL                 A        4.24      0.98      0.10    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.52
  SUBAREA AREA(ACRES) =   98.86      SUBAREA RUNOFF(CFS) =   71.40
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  EFFECTIVE AREA(ACRES) =    343.93    AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.92  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =    343.93        PEAK FLOW RATE(CFS) =     233.58

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.87   HALFSTREET FLOOD WIDTH(FEET) =  36.51
  FLOW VELOCITY(FEET/SEC.) =  8.53   DEPTH*VELOCITY(FT*FT/SEC.) =   7.42

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.79
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.49
  PIPE-FLOW(CFS) =    109.58
  PIPEFLOW TRAVEL TIME(MIN.) =   1.86    Tc(MIN.) =  54.11
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.330
  SUBAREA AREA(ACRES) =   98.86      SUBAREA RUNOFF(CFS) =   73.46
  TOTAL AREA(ACRES) =    343.93        PEAK FLOW RATE(CFS) =    240.78

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  131.20
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.72
    HALFSTREET FLOOD WIDTH(FEET) =   29.12
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.41
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.36
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  1732.0 FT WITH ELEVATION-DROP =  55.0 FT, IS  247.7 CFS,
         WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  10512.00
  LONGEST FLOWPATH FROM NODE  10500.00 TO NODE  10512.00 =  9528.41 FEET.

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  FLOW PROCESS FROM NODE LR010512.0 TO NODE LR010513.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1620.00  DOWNSTREAM ELEVATION(FEET) = 1593.00
  STREET LENGTH(FEET) =  2438.23   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90
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  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     254.50
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  1.07
  HALFSTREET FLOOD WIDTH(FEET) =   46.58
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.77
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.18
STREET FLOW TRAVEL TIME(MIN.) =   7.05   Tc(MIN.) =  61.15
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.236
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
COMMERCIAL                 A        3.47      0.98      0.10    32
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       A       28.29      0.98      0.60    32
AGRICULTURAL FAIR COVER
"ORCHARDS"                 A       22.79      0.88      1.00    44
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.92
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.74
SUBAREA AREA(ACRES) =   54.55      SUBAREA RUNOFF(CFS) =   27.42
EFFECTIVE AREA(ACRES) =    398.48    AREA-AVERAGED Fm(INCH/HR) =  0.57
AREA-AVERAGED Fp(INCH/HR) =  0.92  AREA-AVERAGED Ap =  0.62
TOTAL AREA(ACRES) =    398.48        PEAK FLOW RATE(CFS) =     240.78
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.05   HALFSTREET FLOOD WIDTH(FEET) =  45.54
FLOW VELOCITY(FEET/SEC.) =  5.70   DEPTH*VELOCITY(FT*FT/SEC.) =   5.99

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  10.61
PIPE-FLOW(CFS) =    117.34
PIPEFLOW TRAVEL TIME(MIN.) =   3.83    Tc(MIN.) =  57.94
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.277
SUBAREA AREA(ACRES) =   54.55      SUBAREA RUNOFF(CFS) =   29.42
TOTAL AREA(ACRES) =    398.48        PEAK FLOW RATE(CFS) =    253.66

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  136.32
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.87
  HALFSTREET FLOOD WIDTH(FEET) =   36.39
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.01
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.35
LONGEST FLOWPATH FROM NODE  10500.00 TO NODE  10513.00 = 11966.64 FEET.
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  FLOW PROCESS FROM NODE LR010513.0 TO NODE LR010514.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1593.00  DOWNSTREAM ELEVATION(FEET) = 1570.00
  STREET LENGTH(FEET) =  2581.60   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     277.08
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.15
    HALFSTREET FLOOD WIDTH(FEET) =   50.30
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.40
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.19
  STREET FLOW TRAVEL TIME(MIN.) =   7.97   Tc(MIN.) =  65.91
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.182
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        0.39      0.86      1.00    46
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        3.30      0.98      0.60    32
  COMMERCIAL                 A       30.14      0.98      0.10    32
  PUBLIC PARK                A       28.02      0.98      0.85    32
  SCHOOL                     A        9.10      0.98      0.60    32
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 A        6.47      0.88      1.00    44
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.96
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.53
  SUBAREA AREA(ACRES) =   77.42      SUBAREA RUNOFF(CFS) =   46.83
  EFFECTIVE AREA(ACRES) =    475.90    AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.93  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =    475.90        PEAK FLOW RATE(CFS) =     266.40

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.13   HALFSTREET FLOOD WIDTH(FEET) =  49.51
  FLOW VELOCITY(FEET/SEC.) =  5.35   DEPTH*VELOCITY(FT*FT/SEC.) =   6.05

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
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  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.75
  PIPE-FLOW(CFS) =    171.15
  PIPEFLOW TRAVEL TIME(MIN.) =   4.00    Tc(MIN.) =  61.94
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.226
  SUBAREA AREA(ACRES) =   77.42      SUBAREA RUNOFF(CFS) =   49.95
  TOTAL AREA(ACRES) =    475.90        PEAK FLOW RATE(CFS) =    285.63

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  114.47
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.85
    HALFSTREET FLOOD WIDTH(FEET) =   35.41
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.44
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.76
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  2581.6 FT WITH ELEVATION-DROP =  23.0 FT, IS  143.3 CFS,
         WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  10514.00
  LONGEST FLOWPATH FROM NODE  10500.00 TO NODE  10514.00 = 14548.24 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010514.0 TO NODE LR010543.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1570.00  DOWNSTREAM ELEVATION(FEET) = 1564.00
  STREET LENGTH(FEET) =   151.62   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.74

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     285.63
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.90
    HALFSTREET FLOOD WIDTH(FEET) =   37.85
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.72
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    8.72
  STREET FLOW TRAVEL TIME(MIN.) =   0.26   Tc(MIN.) =  62.20
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.223
  SUBAREA AREA(ACRES) =    0.00      SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =    475.90    AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.93  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =    475.90        PEAK FLOW RATE(CFS) =     285.63
```

```
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.63; 1HR = 0.84; 3HR = 1.38; 6HR = 1.90; 24HR = 4.00

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.90   HALFSTREET FLOOD WIDTH(FEET) =  37.85
  FLOW VELOCITY(FEET/SEC.) =  9.72   DEPTH*VELOCITY(FT*FT/SEC.) =   8.72

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.74
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.16
  PIPE-FLOW(CFS) =    184.53
  PIPEFLOW TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =  62.07
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.225
  SUBAREA AREA(ACRES) =    0.00      SUBAREA RUNOFF(CFS) =    0.00
  TOTAL AREA(ACRES) =    475.90        PEAK FLOW RATE(CFS) =    285.63
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.63; 1HR = 0.84; 3HR = 1.38; 6HR = 1.90; 24HR = 4.00
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  101.09
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.64
    HALFSTREET FLOOD WIDTH(FEET) =   25.22
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.52
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.84
  LONGEST FLOWPATH FROM NODE  10500.00 TO NODE  10543.00 = 14699.86 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010543.0 TO NODE LR010543.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR010520.0 TO NODE LR010521.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   672.38
  ELEVATION DATA: UPSTREAM(FEET) =   1860.00  DOWNSTREAM(FEET) =   1845.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   20.425
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.386
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        8.38      0.86      1.00    46   20.42
```



```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA RUNOFF(CFS) =     11.51
  TOTAL AREA(ACRES) =      8.38   PEAK FLOW RATE(CFS) =     11.51

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.13

****************************************************************************
  FLOW PROCESS FROM NODE LR010521.0 TO NODE LR010522.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1845.00  DOWNSTREAM(FEET) =   1830.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   343.12   CHANNEL SLOPE =  0.0437
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     11.51
  FLOW VELOCITY(FEET/SEC.) =   2.08   FLOW DEPTH(FEET) =   0.33
  TRAVEL TIME(MIN.) =   2.75   Tc(MIN.) =  23.18
  LONGEST FLOWPATH FROM NODE  10520.00 TO NODE  10522.00 =  1015.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010522.0 TO NODE LR010522.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  23.18
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.212
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        8.15      0.86      1.00    46
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =    8.15      SUBAREA RUNOFF(CFS) =    9.92
  EFFECTIVE AREA(ACRES) =     16.53   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     16.53       PEAK FLOW RATE(CFS) =      20.11

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.51

****************************************************************************
  FLOW PROCESS FROM NODE LR010522.0 TO NODE LR010523.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1830.00  DOWNSTREAM(FEET) =   1815.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   408.67   CHANNEL SLOPE =  0.0367
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     20.11
  FLOW VELOCITY(FEET/SEC.) =   2.25   FLOW DEPTH(FEET) =   0.42
  TRAVEL TIME(MIN.) =   3.02   Tc(MIN.) =  26.20
```

```
  LONGEST FLOWPATH FROM NODE  10520.00 TO NODE  10523.00 =  1424.17 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010523.0 TO NODE LR010523.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  26.20
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.055
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                A       10.89      0.86      1.00    46
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =   10.89      SUBAREA RUNOFF(CFS) =   11.71
  EFFECTIVE AREA(ACRES) =     27.42   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     27.42       PEAK FLOW RATE(CFS) =      29.49

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR010523.0 TO NODE LR010524.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1815.00  DOWNSTREAM(FEET) =   1800.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   285.31   CHANNEL SLOPE =  0.0526
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     29.49
  FLOW VELOCITY(FEET/SEC.) =   2.85   FLOW DEPTH(FEET) =   0.45
  TRAVEL TIME(MIN.) =   1.67   Tc(MIN.) =  27.87
  LONGEST FLOWPATH FROM NODE  10520.00 TO NODE  10524.00 =  1709.48 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010524.0 TO NODE LR010524.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  27.87
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.980
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                A       15.94      0.86      1.00    46
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =   15.94      SUBAREA RUNOFF(CFS) =   16.07
  EFFECTIVE AREA(ACRES) =     43.36   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     43.36       PEAK FLOW RATE(CFS) =      43.72
```



```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR010524.0 TO NODE LR010525.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1800.00  DOWNSTREAM(FEET) =   1785.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   688.16   CHANNEL SLOPE =  0.0218
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     43.72
  FLOW VELOCITY(FEET/SEC.) =   2.25   FLOW DEPTH(FEET) =   0.62
  TRAVEL TIME(MIN.) =   5.09   Tc(MIN.) =  32.95
  LONGEST FLOWPATH FROM NODE  10520.00 TO NODE  10525.00 =  2397.64 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010525.0 TO NODE LR010525.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  32.95
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.791
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                A       20.30      0.86      1.00    46
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =   20.30      SUBAREA RUNOFF(CFS) =   17.01
  EFFECTIVE AREA(ACRES) =     63.66   AREA-AVERAGED Fm(INCH/HR) =  0.86
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     63.66       PEAK FLOW RATE(CFS) =      53.33

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR010525.0 TO NODE LR010526.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1785.00  DOWNSTREAM(FEET) =   1755.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   697.48   CHANNEL SLOPE =  0.0430
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     53.33
  FLOW VELOCITY(FEET/SEC.) =   3.04   FLOW DEPTH(FEET) =   0.59
  TRAVEL TIME(MIN.) =   3.82   Tc(MIN.) =  36.78
  LONGEST FLOWPATH FROM NODE  10520.00 TO NODE  10526.00 =  3095.12 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010526.0 TO NODE LR010526.0 IS CODE =  81
----------------------------------------------------------------------------
```

```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN) =  36.78
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.677
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                A       23.91      0.86      1.00    46
  COMMERCIAL                  A        0.89      0.98      0.10    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.97
  SUBAREA AREA(ACRES) =   24.80      SUBAREA RUNOFF(CFS) =   18.84
  EFFECTIVE AREA(ACRES) =     88.46   AREA-AVERAGED Fm(INCH/HR) =  0.85
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =     88.46       PEAK FLOW RATE(CFS) =      65.63

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR010526.0 TO NODE LR010527.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1755.00  DOWNSTREAM(FEET) =   1735.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   505.02   CHANNEL SLOPE =  0.0396
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     65.63
  FLOW VELOCITY(FEET/SEC.) =   3.09   FLOW DEPTH(FEET) =   0.65
  TRAVEL TIME(MIN.) =   2.72   Tc(MIN.) =  39.50
  LONGEST FLOWPATH FROM NODE  10520.00 TO NODE  10527.00 =  3600.14 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010527.0 TO NODE LR010527.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  39.50
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.606
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                A       15.00      0.86      1.00    46
  COMMERCIAL                  A        8.17      0.98      0.10    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.87
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   23.17      SUBAREA RUNOFF(CFS) =   21.17
  EFFECTIVE AREA(ACRES) =    111.63   AREA-AVERAGED Fm(INCH/HR) =  0.80
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =    111.63       PEAK FLOW RATE(CFS) =      81.21

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR010527.0 TO NODE LR010528.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1735.00  DOWNSTREAM(FEET) =   1725.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   890.13   CHANNEL SLOPE =  0.0112
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     81.21
  FLOW VELOCITY(FEET/SEC.) =   2.05   FLOW DEPTH(FEET) =   0.89
  TRAVEL TIME(MIN.) =   7.23   Tc(MIN.) =  46.73
  LONGEST FLOWPATH FROM NODE  10520.00 TO NODE  10528.00 =  4490.27 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010528.0 TO NODE LR010528.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  46.73
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.452
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                A       12.34      0.86      1.00    46
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                  A        3.37      0.88      1.00    44
  COMMERCIAL                  A        5.75      0.98      0.10    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.87
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.76
  SUBAREA AREA(ACRES) =   21.46      SUBAREA RUNOFF(CFS) =   15.32
  EFFECTIVE AREA(ACRES) =    133.09   AREA-AVERAGED Fm(INCH/HR) =  0.78
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  0.90
  TOTAL AREA(ACRES) =    133.09       PEAK FLOW RATE(CFS) =      81.21
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR010528.0 TO NODE LR010529.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1725.00  DOWNSTREAM(FEET) =   1695.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1118.85   CHANNEL SLOPE =  0.0268
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     81.21
  FLOW VELOCITY(FEET/SEC.) =   2.83   FLOW DEPTH(FEET) =   0.76
  TRAVEL TIME(MIN.) =   6.60   Tc(MIN.) =  53.33
  LONGEST FLOWPATH FROM NODE  10520.00 TO NODE  10529.00 =  5609.12 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010529.0 TO NODE LR010529.0 IS CODE =  81
```

```
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
  MAINLINE Tc(MIN) =  53.33
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.342
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                A        4.62      0.98      0.85    32
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        2.25      0.86      1.00    46
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.84      0.98      0.60    32
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 A       32.15      0.88      1.00    44
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.89
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.97
  SUBAREA AREA(ACRES) =   39.86      SUBAREA RUNOFF(CFS) =   17.04
  EFFECTIVE AREA(ACRES) =    172.95   AREA-AVERAGED Fm(INCH/HR) =  0.80
  AREA-AVERAGED Fp(INCH/HR) =  0.87  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =    172.95       PEAK FLOW RATE(CFS) =      84.83

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

******************************************************************************
  FLOW PROCESS FROM NODE LR010529.0 TO NODE LR010530.0 IS CODE =  54
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1695.00  DOWNSTREAM(FEET) =   1660.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1046.42   CHANNEL SLOPE =  0.0334
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     84.83
  FLOW VELOCITY(FEET/SEC.) =   3.12   FLOW DEPTH(FEET) =   0.74
  TRAVEL TIME(MIN.) =   5.59   Tc(MIN.) =  58.91
  LONGEST FLOWPATH FROM NODE  10520.00 TO NODE  10530.00 =  6655.54 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE LR010530.0 TO NODE LR010530.0 IS CODE =  81
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
  MAINLINE Tc(MIN) =  58.91
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.264
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                A       18.01      0.98      0.85    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        3.96      0.98      0.60    32
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 A       53.29      0.88      1.00    44
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.90
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.94
  SUBAREA AREA(ACRES) =   75.26      SUBAREA RUNOFF(CFS) =   27.88
```



```
  EFFECTIVE AREA(ACRES) =    248.21   AREA-AVERAGED Fm(INCH/HR) =  0.81
  AREA-AVERAGED Fp(INCH/HR) =  0.88  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =    248.21       PEAK FLOW RATE(CFS) =     100.59

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

******************************************************************************
  FLOW PROCESS FROM NODE LR010530.0 TO NODE LR010531.0 IS CODE =  54
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1660.00  DOWNSTREAM(FEET) =   1635.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   766.04   CHANNEL SLOPE =  0.0326
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  75.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    100.59
  FLOW VELOCITY(FEET/SEC.) =   2.88   FLOW DEPTH(FEET) =   0.68
  TRAVEL TIME(MIN.) =   4.43   Tc(MIN.) =  63.34
  LONGEST FLOWPATH FROM NODE  10520.00 TO NODE  10531.00 =  7421.58 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE LR010531.0 TO NODE LR010531.0 IS CODE =  81
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
  MAINLINE Tc(MIN) =  63.34
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.210
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                A       15.83      0.98      0.85    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        4.11      0.98      0.60    32
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 A       35.99      0.88      1.00    44
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.91
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.93
  SUBAREA AREA(ACRES) =   55.93      SUBAREA RUNOFF(CFS) =   18.43
  EFFECTIVE AREA(ACRES) =    304.14   AREA-AVERAGED Fm(INCH/HR) =  0.82
  AREA-AVERAGED Fp(INCH/HR) =  0.89  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =    304.14       PEAK FLOW RATE(CFS) =     107.01

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

******************************************************************************
  FLOW PROCESS FROM NODE LR010531.0 TO NODE LR010542.0 IS CODE =  54
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1635.00  DOWNSTREAM(FEET) =   1610.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   819.03   CHANNEL SLOPE =  0.0305
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    107.01
```

```
  FLOW VELOCITY(FEET/SEC.) =   3.19   FLOW DEPTH(FEET) =   0.82
  TRAVEL TIME(MIN.) =   4.28   Tc(MIN.) =  67.62
  LONGEST FLOWPATH FROM NODE  10520.00 TO NODE  10542.00 =  8240.61 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010542.0 TO NODE LR010542.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  67.62
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.163
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                A       22.46      0.98      0.85    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.50      0.98      0.60    32
  COMMERCIAL                 A        8.47      0.98      0.10    32
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 A       11.86      0.88      1.00    44
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.94
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.74
  SUBAREA AREA(ACRES) =   44.29      SUBAREA RUNOFF(CFS) =   18.70
  EFFECTIVE AREA(ACRES) =    348.43   AREA-AVERAGED Fm(INCH/HR) =  0.80
  AREA-AVERAGED Fp(INCH/HR) =  0.89  AREA-AVERAGED Ap =  0.90
  TOTAL AREA(ACRES) =    348.43       PEAK FLOW RATE(CFS) =     112.97

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR010542.0 TO NODE LR010542.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  67.62
  RAINFALL INTENSITY(INCH/HR) =   1.16
  AREA-AVERAGED Fm(INCH/HR) =  0.80
  AREA-AVERAGED Fp(INCH/HR) =  0.89
  AREA-AVERAGED Ap =  0.90
  EFFECTIVE STREAM AREA(ACRES) =   348.43
  TOTAL STREAM AREA(ACRES) =   348.43
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    112.97

****************************************************************************
  FLOW PROCESS FROM NODE LR010540.0 TO NODE LR010541.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   810.53
  ELEVATION DATA: UPSTREAM(FEET) =   1660.00  DOWNSTREAM(FEET) =   1638.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   21.163
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.336
```



```
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 A        4.86      0.88      1.00    44   21.16
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.88
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA RUNOFF(CFS) =      6.37
  TOTAL AREA(ACRES) =      4.86   PEAK FLOW RATE(CFS) =      6.37

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR010541.0 TO NODE LR010542.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1638.00  DOWNSTREAM(FEET) =   1610.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2028.76   CHANNEL SLOPE =  0.0138
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      6.37
  FLOW VELOCITY(FEET/SEC.) =   1.56   FLOW DEPTH(FEET) =   0.52
  TRAVEL TIME(MIN.) =  21.67   Tc(MIN.) =  42.84
  LONGEST FLOWPATH FROM NODE  10540.00 TO NODE  10542.00 =  2839.29 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010542.0 TO NODE LR010542.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  42.84
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.530
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 A        8.37      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.30      0.98      0.60    32
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 A        0.12      0.88      1.00    44
  PUBLIC PARK                A        1.18      0.98      0.85    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.21
  SUBAREA AREA(ACRES) =    9.97      SUBAREA RUNOFF(CFS) =   11.86
  EFFECTIVE AREA(ACRES) =     14.83   AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.91  AREA-AVERAGED Ap =  0.47
  TOTAL AREA(ACRES) =     14.83       PEAK FLOW RATE(CFS) =      14.70

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR010542.0 TO NODE LR010542.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
```

```
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  42.84
  RAINFALL INTENSITY(INCH/HR) =   1.53
  AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.91
  AREA-AVERAGED Ap =  0.47
  EFFECTIVE STREAM AREA(ACRES) =    14.83
  TOTAL STREAM AREA(ACRES) =    14.83
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     14.70

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    112.97  67.62    1.163  0.89( 0.80) 0.90   348.4 LR010520.0
      2     14.70  42.84    1.530  0.91( 0.43) 0.47    14.8 LR010540.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    127.67  42.84    1.530  0.89( 0.78) 0.87   235.6 LR010540.0
      2    122.78  67.62    1.163  0.89( 0.79) 0.88   363.3 LR010520.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    127.67    Tc(MIN.) =    42.84
  EFFECTIVE AREA(ACRES) =   235.56   AREA-AVERAGED Fm(INCH/HR) =  0.78
  AREA-AVERAGED Fp(INCH/HR) =  0.89  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =    363.26
  LONGEST FLOWPATH FROM NODE  10520.00 TO NODE  10542.00 =  8240.61 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010542.0 TO NODE LR010543.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1610.00  DOWNSTREAM(FEET) =   1564.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2038.97   CHANNEL SLOPE =  0.0226
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    127.67
  FLOW VELOCITY(FEET/SEC.) =   4.02   FLOW DEPTH(FEET) =   1.45
  TRAVEL TIME(MIN.) =   8.44   Tc(MIN.) =  51.28
  LONGEST FLOWPATH FROM NODE  10520.00 TO NODE  10543.00 = 10279.58 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010543.0 TO NODE LR010543.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  51.28
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.373
  SUBAREA LOSS RATE DATA(AMC  II):
```



```
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        7.65      0.86       1.00    46
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        A        1.83      0.98       0.60    32
  PUBLIC PARK                 A       22.84      0.98       0.85    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.94
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.87
  SUBAREA AREA(ACRES) =   32.32      SUBAREA RUNOFF(CFS) =   16.03
  EFFECTIVE AREA(ACRES) =    267.88   AREA-AVERAGED Fm(INCH/HR) =  0.78
  AREA-AVERAGED Fp(INCH/HR) =  0.90  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =    395.58       PEAK FLOW RATE(CFS) =     141.93

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR010543.0 TO NODE LR010543.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    141.93  51.28    1.373  0.90( 0.78) 0.87   267.9 LR010540.0
      2    122.78  76.20    1.083  0.90( 0.79) 0.88   395.6 LR010520.0
  LONGEST FLOWPATH FROM NODE  10520.00 TO NODE  10543.00 = 10279.58 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    285.63  62.07    1.225  0.93( 0.56) 0.60   475.9 LR010500.0
  LONGEST FLOWPATH FROM NODE  10500.00 TO NODE  10543.00 = 14699.86 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    427.56  51.28    1.373  0.91( 0.65) 0.71   661.1 LR010540.0
      2    419.27  62.07    1.225  0.91( 0.65) 0.71   799.1 LR010500.0
      3    347.53  76.20    1.083  0.91( 0.66) 0.73   871.5 LR010520.0
    TOTAL AREA(ACRES) =    871.48

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      427.56  Tc(MIN.) =   51.282
  EFFECTIVE AREA(ACRES) =    661.07  AREA-AVERAGED Fm(INCH/HR) =  0.65
  AREA-AVERAGED Fp(INCH/HR) =  0.91  AREA-AVERAGED Ap =  0.71
  TOTAL AREA(ACRES) =    871.48
  LONGEST FLOWPATH FROM NODE  10500.00 TO NODE  10543.00 = 14699.86 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010543.0 TO NODE LR010543.0 IS CODE =  71
----------------------------------------------------------------------------
  >>>>>PEAK FLOW RATE ESTIMATOR CHANGED TO UNIT-HYDROGRAPH METHOD<<<<<
  >>>>>USING TIME-OF-CONCENTRATION OF LONGEST FLOWPATH<<<<<
============================================================================
  UNIT-HYDROGRAPH DATA:
```

```
  RAINFALL(INCH): 5M= 0.44;30M= 0.91;1H= 1.20;3H= 1.95;6H= 2.65;24H= 6.25
  S-GRAPH: VALLEY(DEV.)= 55.7%;VALLEY(UNDEV.)/DESERT= 44.3%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 1.03; LAG(HR) = 0.83; Fm(INCH/HR) = 0.66; Ybar = 0.67
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    871.48
  LONGEST FLOWPATH FROM NODE  10500.00 TO NODE  10543.00 = 14699.86 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0615; Lca/L=0.4,n=.0551; Lca/L=0.5,n=.0506;Lca/L=0.6,n=.0472
  TIME OF PEAK FLOW(HR) = 16.83  RUNOFF VOLUME(AF) =     170.43
  UNIT-HYDROGRAPH METHOD PEAK FLOW RATE(CFS) =    544.06
  TOTAL PEAK FLOW RATE(CFS) =    544.06 (SOURCE FLOW INCLUDED)
  RATIONAL METHOD PEAK FLOW RATE(CFS) =    427.56
   (UPSTREAM NODE PEAK FLOW RATE(CFS) =    427.56)
  PEAK FLOW RATE(CFS) USED =    544.06

****************************************************************************
  FLOW PROCESS FROM NODE LR010543.0 TO NODE LR010543.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =    871.48  TC(MIN.) =     62.07
  AREA-AVERAGED Fm(INCH/HR)=  0.66   Ybar =  0.67
  PEAK FLOW RATE(CFS)   =    544.06
============================================================================
============================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                           County of San Bernardino
                         Transportation Flood Control

                          Water Resources Division

 ------------------------------------------------------------------------
   FILE NAME: LR0106ZZ.Z13
   TIME/DATE OF STUDY: 10:39 09/13/2004
 ========================================================================
   USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
 ========================================================================
                      --*TIME-OF-CONCENTRATION MODEL*--

   USER SPECIFIED STORM EVENT(YEAR) =  100.00
   SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
   SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
   *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

   SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
   USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.2500

   *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

   *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
      HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
      WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
 NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)     (n)
 ===  =====  ========  =================  ======  =====  ====  =====  =======
   1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
   2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
   3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
   4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
   5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
   6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
   7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
   8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
   9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180

   GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
```



```
     1. Relative Flow-Depth =  0.20 FEET
        as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
     2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
   *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
    OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
   *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

   UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
     WATERSHED LAG = 0.80 * Tc
     USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
     1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
     FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
     PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
     SIERRA MADRE DEPTH-AREA FACTORS USED.
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


 ************************************************************************
   FLOW PROCESS FROM NODE LR010600.0 TO NODE LR010601.0 IS CODE =  21
 ------------------------------------------------------------------------
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
 ========================================================================
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   618.17
   ELEVATION DATA: UPSTREAM(FEET) =   1625.00  DOWNSTREAM(FEET) =   1623.00

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.512
   * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.202
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
   RESIDENTIAL
   "3-4 DWELLINGS/ACRE"       A        3.34      0.98       0.60    32   16.96
   MOBILE HOME PARK           A        0.22      0.98       0.25    32   13.83
   COMMERCIAL                 A        6.15      0.98       0.10    32   12.51
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.28
   SUBAREA RUNOFF(CFS) =     25.63
   TOTAL AREA(ACRES) =      9.71   PEAK FLOW RATE(CFS) =     25.63

   SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
   5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

 ************************************************************************
   FLOW PROCESS FROM NODE LR010601.0 TO NODE LR010602.0 IS CODE =  63
 ------------------------------------------------------------------------
   >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
 ========================================================================
   UPSTREAM ELEVATION(FEET) = 1623.00  DOWNSTREAM ELEVATION(FEET) = 1620.00
   STREET LENGTH(FEET) =   304.04   CURB HEIGHT(INCHES) =  8.0
   STREET HALFWIDTH(FEET) = 32.00

   DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
   INSIDE STREET CROSSFALL(DECIMAL) =  0.020
   OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
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  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      33.33
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.61
    HALFSTREET FLOOD WIDTH(FEET) =   22.82
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.09
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.90
  STREET FLOW TRAVEL TIME(MIN.) =   1.64   Tc(MIN.) =  14.15
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.974
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A        0.33      0.98      0.25    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.58      0.98      0.60    32
  COMMERCIAL                 A        4.32      0.98      0.10    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.23
  SUBAREA AREA(ACRES) =    6.23      SUBAREA RUNOFF(CFS) =   15.39
  EFFECTIVE AREA(ACRES) =     15.94    AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.26
  TOTAL AREA(ACRES) =     15.94        PEAK FLOW RATE(CFS) =      39.03

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.64   HALFSTREET FLOOD WIDTH(FEET) =  24.30
  FLOW VELOCITY(FEET/SEC.) =  3.20   DEPTH*VELOCITY(FT*FT/SEC.) =   2.06
  LONGEST FLOWPATH FROM NODE  10600.00 TO NODE  10602.00 =   922.21 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010602.0 TO NODE LR010603.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1620.00  DOWNSTREAM ELEVATION(FEET) = 1608.00
  STREET LENGTH(FEET) =   354.64   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.85

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      47.36
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
```



```
    STREET FLOW DEPTH(FEET) =  0.57
    HALFSTREET FLOOD WIDTH(FEET) =   20.55
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.36
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.05
  STREET FLOW TRAVEL TIME(MIN.) =   1.10   Tc(MIN.) =  15.26
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.843
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        2.24      0.98      0.60    32
  COMMERCIAL                 A        4.90      0.98      0.10    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.26
  SUBAREA AREA(ACRES) =    7.14      SUBAREA RUNOFF(CFS) =   16.66
  EFFECTIVE AREA(ACRES) =     23.08    AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.26
  TOTAL AREA(ACRES) =     23.08        PEAK FLOW RATE(CFS) =      53.81

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.59   HALFSTREET FLOOD WIDTH(FEET) =  21.65
  FLOW VELOCITY(FEET/SEC.) =  5.52   DEPTH*VELOCITY(FT*FT/SEC.) =   3.26
  LONGEST FLOWPATH FROM NODE  10600.00 TO NODE  10603.00 =  1276.85 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010603.0 TO NODE LR010604.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1608.00  DOWNSTREAM ELEVATION(FEET) = 1596.00
  STREET LENGTH(FEET) =   420.77   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.88

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      62.88
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.63
    HALFSTREET FLOOD WIDTH(FEET) =   23.84
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.36
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.40
  STREET FLOW TRAVEL TIME(MIN.) =   1.31   Tc(MIN.) =  16.56
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.706
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        2.80      0.98      0.60    32
  COMMERCIAL                 A        4.90      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.05      0.75      0.60    56
  COMMERCIAL                 B        0.50      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.27
  SUBAREA AREA(ACRES) =    8.25      SUBAREA RUNOFF(CFS) =   18.13
  EFFECTIVE AREA(ACRES) =     31.33    AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.26
  TOTAL AREA(ACRES) =     31.33        PEAK FLOW RATE(CFS) =      69.10

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.65   HALFSTREET FLOOD WIDTH(FEET) =  24.70
  FLOW VELOCITY(FEET/SEC.) =  5.49   DEPTH*VELOCITY(FT*FT/SEC.) =   3.58
  LONGEST FLOWPATH FROM NODE  10600.00 TO NODE  10604.00 =  1697.62 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010604.0 TO NODE LR010605.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1596.00  DOWNSTREAM ELEVATION(FEET) = 1590.00
  STREET LENGTH(FEET) =   926.26   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      82.74
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.84
    HALFSTREET FLOOD WIDTH(FEET) =   34.42
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.52
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.94
  STREET FLOW TRAVEL TIME(MIN.) =   4.38   Tc(MIN.) =  20.94
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.350
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        8.73      0.98      0.60    32
  COMMERCIAL                 A        3.00      0.98      0.10    32
  MOBILE HOME PARK           A        3.84      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
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  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.42
  SUBAREA AREA(ACRES) =   15.57      SUBAREA RUNOFF(CFS) =   27.24
  EFFECTIVE AREA(ACRES) =     46.90    AREA-AVERAGED Fm(INCH/HR) =  0.31
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.31
  TOTAL AREA(ACRES) =     46.90        PEAK FLOW RATE(CFS) =      86.32

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.84   HALFSTREET FLOOD WIDTH(FEET) =  34.91
  FLOW VELOCITY(FEET/SEC.) =  3.57   DEPTH*VELOCITY(FT*FT/SEC.) =   3.02
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  926.3 FT WITH ELEVATION-DROP =   6.0 FT, IS   38.6 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  10605.00
  LONGEST FLOWPATH FROM NODE  10600.00 TO NODE  10605.00 =  2623.88 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010605.0 TO NODE LR010606.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1590.00  DOWNSTREAM ELEVATION(FEET) = 1587.00
  STREET LENGTH(FEET) =   420.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      98.14
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.86
    HALFSTREET FLOOD WIDTH(FEET) =   35.89
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.84
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.32
  STREET FLOW TRAVEL TIME(MIN.) =   1.82   Tc(MIN.) =  22.77
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.236
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        8.05      0.98      0.60    32
  COMMERCIAL                 A        2.41      0.98      0.10    32
  MOBILE HOME PARK           A        3.93      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.42
  SUBAREA AREA(ACRES) =   14.39      SUBAREA RUNOFF(CFS) =   23.64
  EFFECTIVE AREA(ACRES) =     61.29    AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.34
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  TOTAL AREA(ACRES) =     61.29        PEAK FLOW RATE(CFS) =     105.12

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.88   HALFSTREET FLOOD WIDTH(FEET) =  36.80
  FLOW VELOCITY(FEET/SEC.) =  3.91   DEPTH*VELOCITY(FT*FT/SEC.) =   3.45
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  420.0 FT WITH ELEVATION-DROP =   3.0 FT, IS   44.7 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  10606.00
  LONGEST FLOWPATH FROM NODE  10600.00 TO NODE  10606.00 =  3043.88 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010606.0 TO NODE LR010607.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1587.00  DOWNSTREAM ELEVATION(FEET) = 1585.00
  STREET LENGTH(FEET) =   536.63   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     117.42
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.01
    HALFSTREET FLOOD WIDTH(FEET) =   43.09
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.18
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.21
  STREET FLOW TRAVEL TIME(MIN.) =   2.81   Tc(MIN.) =  25.58
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.085
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 A        1.08      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       11.66      0.98      0.60    32
  MOBILE HOME PARK           A        4.18      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.48
  SUBAREA AREA(ACRES) =   16.92      SUBAREA RUNOFF(CFS) =   24.60
  EFFECTIVE AREA(ACRES) =     78.21    AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.37
  TOTAL AREA(ACRES) =     78.21        PEAK FLOW RATE(CFS) =     121.39

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
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  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.02   HALFSTREET FLOOD WIDTH(FEET) =  43.64
  FLOW VELOCITY(FEET/SEC.) =  3.21   DEPTH*VELOCITY(FT*FT/SEC.) =   3.27
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  536.6 FT WITH ELEVATION-DROP =   2.0 FT, IS   44.2 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  10607.00
  LONGEST FLOWPATH FROM NODE  10600.00 TO NODE  10607.00 =  3580.51 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010607.0 TO NODE LR010608.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1585.00  DOWNSTREAM ELEVATION(FEET) = 1580.00
  STREET LENGTH(FEET) =   764.25   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     136.64
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.97
    HALFSTREET FLOOD WIDTH(FEET) =   41.08
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.08
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.95
  STREET FLOW TRAVEL TIME(MIN.) =   3.12   Tc(MIN.) =  28.70
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.946
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       22.59      0.98      0.60    32
  COMMERCIAL                 A        1.69      0.98      0.10    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.57
  SUBAREA AREA(ACRES) =   24.28      SUBAREA RUNOFF(CFS) =   30.47
  EFFECTIVE AREA(ACRES) =    102.49    AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.42
  TOTAL AREA(ACRES) =    102.49        PEAK FLOW RATE(CFS) =     142.06

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.98   HALFSTREET FLOOD WIDTH(FEET) =  41.69
  FLOW VELOCITY(FEET/SEC.) =  4.11   DEPTH*VELOCITY(FT*FT/SEC.) =   4.03
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
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       AND L =  764.2 FT WITH ELEVATION-DROP =   5.0 FT, IS   60.3 CFS,
       WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  10608.00
 LONGEST FLOWPATH FROM NODE  10600.00 TO NODE  10608.00 =  4344.76 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR010608.0 TO NODE LR010609.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1580.00  DOWNSTREAM ELEVATION(FEET) = 1575.00
 STREET LENGTH(FEET) =  1057.88   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     159.17
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  1.07
   HALFSTREET FLOOD WIDTH(FEET) =   46.20
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.75
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.01
 STREET FLOW TRAVEL TIME(MIN.) =   4.70   Tc(MIN.) =  33.41
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.776
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL FAIR COVER
 "ORCHARDS"                 A       10.97      0.88      1.00    44
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A       20.08      0.98      0.60    32
 COMMERCIAL                 A        2.51      0.98      0.10    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.93
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
 SUBAREA AREA(ACRES) =   33.56      SUBAREA RUNOFF(CFS) =   34.17
 EFFECTIVE AREA(ACRES) =    136.05    AREA-AVERAGED Fm(INCH/HR) =  0.46
 AREA-AVERAGED Fp(INCH/HR) =  0.96  AREA-AVERAGED Ap =  0.48
 TOTAL AREA(ACRES) =    136.05        PEAK FLOW RATE(CFS) =     160.61

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 1.07   HALFSTREET FLOOD WIDTH(FEET) =  46.32
 FLOW VELOCITY(FEET/SEC.) =  3.76   DEPTH*VELOCITY(FT*FT/SEC.) =   4.04

 *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 1.07
 SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
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 ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
 ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
 ASSUME FULL-FLOWING PIPELINE
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.56
 PIPE-FLOW(CFS) =     14.34
 PIPEFLOW TRAVEL TIME(MIN.) =   3.87    Tc(MIN.) =  32.57
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.804
 SUBAREA AREA(ACRES) =   33.56      SUBAREA RUNOFF(CFS) =   34.99
 TOTAL AREA(ACRES) =    136.05        PEAK FLOW RATE(CFS) =    163.95

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  149.61
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  1.05
   HALFSTREET FLOOD WIDTH(FEET) =   45.10
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.70
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.88
 LONGEST FLOWPATH FROM NODE  10600.00 TO NODE  10609.00 =  5402.64 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR010609.0 TO NODE LR010610.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1575.00  DOWNSTREAM ELEVATION(FEET) = 1565.00
 STREET LENGTH(FEET) =  1098.26   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     175.99
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  1.00
   HALFSTREET FLOOD WIDTH(FEET) =   42.42
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.92
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.90
 STREET FLOW TRAVEL TIME(MIN.) =   3.72   Tc(MIN.) =  36.29
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.690
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        1.61      0.98      0.60    32
 AGRICULTURAL FAIR COVER
 "ORCHARDS"                 A       25.43      0.88      1.00    44
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  COMMERCIAL                  A        2.74      0.98      0.10    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.88
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.90
  SUBAREA AREA(ACRES) =   29.78      SUBAREA RUNOFF(CFS) =   24.07
  EFFECTIVE AREA(ACRES) =    165.83    AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.94  AREA-AVERAGED Ap =  0.56
  TOTAL AREA(ACRES) =    165.83        PEAK FLOW RATE(CFS) =     174.15

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.99   HALFSTREET FLOOD WIDTH(FEET) =  42.30
  FLOW VELOCITY(FEET/SEC.) =  4.90   DEPTH*VELOCITY(FT*FT/SEC.) =   4.86
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.33
  PIPE-FLOW(CFS) =     19.90
  PIPEFLOW TRAVEL TIME(MIN.) =   2.89    Tc(MIN.) =  35.46
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.714
  SUBAREA AREA(ACRES) =   29.78      SUBAREA RUNOFF(CFS) =   24.70
  TOTAL AREA(ACRES) =    165.83        PEAK FLOW RATE(CFS) =    177.66

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  157.76
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.96
    HALFSTREET FLOOD WIDTH(FEET) =   40.77
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.78
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.60
  LONGEST FLOWPATH FROM NODE  10600.00 TO NODE  10610.00 =  6500.90 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010610.0 TO NODE LR010611.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1565.00  DOWNSTREAM(FEET) =   1542.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1070.05   CHANNEL SLOPE =  0.0215
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  75.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    177.66
  FLOW VELOCITY(FEET/SEC.) =   2.86   FLOW DEPTH(FEET) =   0.91
  TRAVEL TIME(MIN.) =   6.24   Tc(MIN.) =  41.71
  LONGEST FLOWPATH FROM NODE  10600.00 TO NODE  10611.00 =  7570.95 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010611.0 TO NODE LR010611.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  41.71
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.555
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  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                 A        0.10      0.86      1.00    46
  COMMERCIAL                   A        0.50      0.98      0.10    32
  SCHOOL                       A       44.97      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"         A        0.33      0.98      0.60    32
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                   A        0.47      0.88      1.00    44
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   46.37      SUBAREA RUNOFF(CFS) =   40.54
  EFFECTIVE AREA(ACRES) =    212.20   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.95  AREA-AVERAGED Ap =  0.57
  TOTAL AREA(ACRES) =    212.20        PEAK FLOW RATE(CFS) =     194.48

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR010611.0 TO NODE LR010612.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1542.00  DOWNSTREAM(FEET) =   1515.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1122.52   CHANNEL SLOPE =  0.0241
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  75.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    194.48
  FLOW VELOCITY(FEET/SEC.) =   3.06   FLOW DEPTH(FEET) =   0.92
  TRAVEL TIME(MIN.) =   6.11   Tc(MIN.) =  47.82
  LONGEST FLOWPATH FROM NODE  10600.00 TO NODE  10612.00 =  8693.47 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010612.0 TO NODE LR010612.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  47.82
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.432
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  SCHOOL                       A       28.27      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   28.27      SUBAREA RUNOFF(CFS) =   21.56
  EFFECTIVE AREA(ACRES) =    240.47   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.95  AREA-AVERAGED Ap =  0.57
  TOTAL AREA(ACRES) =    240.47        PEAK FLOW RATE(CFS) =     194.48
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR010612.0 TO NODE LR010613.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1515.00  DOWNSTREAM(FEET) =   1480.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1037.86   CHANNEL SLOPE =  0.0337
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  75.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    194.48
  FLOW VELOCITY(FEET/SEC.) =   3.47   FLOW DEPTH(FEET) =   0.86
  TRAVEL TIME(MIN.) =   4.99   Tc(MIN.) =  52.81
  LONGEST FLOWPATH FROM NODE  10600.00 TO NODE  10613.00 =  9731.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010613.0 TO NODE LR010613.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  52.81
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.350
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  SCHOOL                     A       17.15      0.98       0.60    32
  SCHOOL                     B        4.35      0.75       0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.93
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   21.50      SUBAREA RUNOFF(CFS) =   15.33
  EFFECTIVE AREA(ACRES) =    261.97   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.95  AREA-AVERAGED Ap =  0.57
  TOTAL AREA(ACRES) =    261.97       PEAK FLOW RATE(CFS) =     194.48
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR010613.0 TO NODE LR010614.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1480.00  DOWNSTREAM(FEET) =   1445.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1284.19   CHANNEL SLOPE =  0.0273
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  40.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    194.48
  FLOW VELOCITY(FEET/SEC.) =   3.74   FLOW DEPTH(FEET) =   1.14
  TRAVEL TIME(MIN.) =   5.72   Tc(MIN.) =  58.52
  LONGEST FLOWPATH FROM NODE  10600.00 TO NODE  10614.00 = 11015.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010614.0 TO NODE LR010614.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```



```
  MAINLINE Tc(MIN) =  58.52
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.269
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  SCHOOL                     A       24.96      0.98       0.60    32
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        0.05      0.86       1.00    46
  SCHOOL                     B        5.81      0.75       0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.10      0.98       0.60    32
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 A        0.07      0.88       1.00    44
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.93
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   30.99      SUBAREA RUNOFF(CFS) =   19.75
  EFFECTIVE AREA(ACRES) =    292.96   AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.95  AREA-AVERAGED Ap =  0.58
  TOTAL AREA(ACRES) =    292.96       PEAK FLOW RATE(CFS) =     194.48
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =    292.96  TC(MIN.) =     58.52
  EFFECTIVE AREA(ACRES) =    292.96  AREA-AVERAGED Fm(INCH/HR)=  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.95  AREA-AVERAGED Ap =  0.58
  PEAK FLOW RATE(CFS)   =    194.48
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

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************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                        Analysis prepared by:

                          County of San Bernardino
                        Transportation Flood Control

                          Water Resources Division

------------------------------------------------------------------------
  FILE NAME: LR0107ZZ.Z13
  TIME/DATE OF STUDY: 10:40 09/13/2004
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.2500

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)     (n)
===  =====  ========  =================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
```



```
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE = 0.0010

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


************************************************************************
  FLOW PROCESS FROM NODE LR010700.0 TO NODE LR010701.0 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   713.44
  ELEVATION DATA: UPSTREAM(FEET) =   1595.00  DOWNSTREAM(FEET) =   1590.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.353
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.394
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.96      0.98       0.60    32   15.39
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 A        2.89      0.88       1.00    44   26.36
  COMMERCIAL                 A        0.58      0.98       0.10    32   11.35
  COMMERCIAL                 B        1.54      0.75       0.10    56   11.35
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.44      0.75       0.60    56   15.39
  MOBILE HOME PARK           B        2.21      0.75       0.25    56   12.55
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.85
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.53
  SUBAREA RUNOFF(CFS) =     25.48
  TOTAL AREA(ACRES) =      9.62   PEAK FLOW RATE(CFS) =     25.48

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 4.00

************************************************************************
  FLOW PROCESS FROM NODE LR010701.0 TO NODE LR010702.0 IS CODE =  62
------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
========================================================================
  UPSTREAM ELEVATION(FEET) = 1590.00  DOWNSTREAM ELEVATION(FEET) = 1585.00
  STREET LENGTH(FEET) =   219.37   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00
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 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      39.68
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.57
   HALFSTREET FLOOD WIDTH(FEET) =   20.79
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.40
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.52
 STREET FLOW TRAVEL TIME(MIN.) =   0.83   Tc(MIN.) =  12.18
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.253
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL FAIR COVER
 "ORCHARDS"                 A        3.42      0.88      1.00    44
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        0.44      0.98      0.60    32
 COMMERCIAL                 A        0.99      0.98      0.10    32
 COMMERCIAL                 B        2.42      0.75      0.10    56
 MOBILE HOME PARK           B        3.53      0.75      0.25    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.22      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.85
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.46
 SUBAREA AREA(ACRES) =   11.02      SUBAREA RUNOFF(CFS) =   28.39
 EFFECTIVE AREA(ACRES) =     20.64    AREA-AVERAGED Fm(INCH/HR) =  0.42
 AREA-AVERAGED Fp(INCH/HR) =  0.85  AREA-AVERAGED Ap =  0.49
 TOTAL AREA(ACRES) =     20.64        PEAK FLOW RATE(CFS) =      52.66

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 4.00

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.62   HALFSTREET FLOOD WIDTH(FEET) =  23.21
 FLOW VELOCITY(FEET/SEC.) =  4.72   DEPTH*VELOCITY(FT*FT/SEC.) =   2.94
 LONGEST FLOWPATH FROM NODE  10700.00 TO NODE  10702.00 =   932.81 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR010702.0 TO NODE LR010703.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1585.00  DOWNSTREAM ELEVATION(FEET) = 1580.00
 STREET LENGTH(FEET) =   197.50   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 32.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
```



```
 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.91

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      64.06
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.65
   HALFSTREET FLOOD WIDTH(FEET) =   24.54
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.16
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.35
 STREET FLOW TRAVEL TIME(MIN.) =   0.64   Tc(MIN.) =  12.82
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.155
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL FAIR COVER
 "ORCHARDS"                 A        3.27      0.88      1.00    44
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        0.40      0.98      0.60    32
 COMMERCIAL                 A        1.00      0.98      0.10    32
 COMMERCIAL                 B        1.80      0.75      0.10    56
 MOBILE HOME PARK           B        2.65      0.75      0.25    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.15      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.49
 SUBAREA AREA(ACRES) =    9.27      SUBAREA RUNOFF(CFS) =   22.81
 EFFECTIVE AREA(ACRES) =     29.91    AREA-AVERAGED Fm(INCH/HR) =  0.42
 AREA-AVERAGED Fp(INCH/HR) =  0.85  AREA-AVERAGED Ap =  0.49
 TOTAL AREA(ACRES) =     29.91        PEAK FLOW RATE(CFS) =      73.64

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.68   HALFSTREET FLOOD WIDTH(FEET) =  26.31
 FLOW VELOCITY(FEET/SEC.) =  5.35   DEPTH*VELOCITY(FT*FT/SEC.) =   3.61
 LONGEST FLOWPATH FROM NODE  10700.00 TO NODE  10703.00 =  1130.31 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR010703.0 TO NODE LR010704.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1580.00  DOWNSTREAM ELEVATION(FEET) = 1575.00
 STREET LENGTH(FEET) =   303.50   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 32.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
```

```
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.01

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      88.76
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.76
    HALFSTREET FLOOD WIDTH(FEET) =   34.91
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.67
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.55
  STREET FLOW TRAVEL TIME(MIN.) =   1.08   Tc(MIN.) =  13.91
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.005
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 A        4.72      0.88      1.00    44
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        2.26      0.98      0.60    32
  COMMERCIAL                 A        0.25      0.98      0.10    32
  COMMERCIAL                 B        0.38      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.67      0.75      0.60    56
  MOBILE HOME PARK           B        0.62      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.84
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   13.90      SUBAREA RUNOFF(CFS) =   30.22
  EFFECTIVE AREA(ACRES) =     43.81    AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.85  AREA-AVERAGED Ap =  0.56
  TOTAL AREA(ACRES) =     43.81        PEAK FLOW RATE(CFS) =      99.83

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.79   HALFSTREET FLOOD WIDTH(FEET) =  37.56
  FLOW VELOCITY(FEET/SEC.) =  4.76   DEPTH*VELOCITY(FT*FT/SEC.) =   3.76
  LONGEST FLOWPATH FROM NODE  10700.00 TO NODE  10704.00 =  1433.81 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010704.0 TO NODE LR010705.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1575.00  DOWNSTREAM ELEVATION(FEET) = 1565.00
  STREET LENGTH(FEET) =   417.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.92
```



```
    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     119.99
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.79
    HALFSTREET FLOOD WIDTH(FEET) =   37.41
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.76
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.53
  STREET FLOW TRAVEL TIME(MIN.) =   1.21   Tc(MIN.) =  15.11
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.859
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 A        6.41      0.88      1.00    44
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        4.58      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        9.00      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.85
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.73
  SUBAREA AREA(ACRES) =   19.99      SUBAREA RUNOFF(CFS) =   40.31
  EFFECTIVE AREA(ACRES) =     63.80    AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.85  AREA-AVERAGED Ap =  0.61
  TOTAL AREA(ACRES) =     63.80        PEAK FLOW RATE(CFS) =     134.36

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.81   HALFSTREET FLOOD WIDTH(FEET) =  39.22
  FLOW VELOCITY(FEET/SEC.) =  5.91   DEPTH*VELOCITY(FT*FT/SEC.) =   4.80
  LONGEST FLOWPATH FROM NODE  10700.00 TO NODE  10705.00 =  1851.31 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010705.0 TO NODE LR010706.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1565.00  DOWNSTREAM ELEVATION(FEET) = 1557.00
  STREET LENGTH(FEET) =   423.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.97

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     153.00
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.86
    HALFSTREET FLOOD WIDTH(FEET) =   41.78
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  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.69
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.91
STREET FLOW TRAVEL TIME(MIN.) =   1.24   Tc(MIN.) =  16.35
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.727
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
AGRICULTURAL FAIR COVER
"ORCHARDS"                 A        4.00      0.88      1.00    44
AGRICULTURAL FAIR COVER
"ORCHARDS"                 B        2.81      0.63      1.00    65
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       A        4.90      0.98      0.60    32
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        7.75      0.75      0.60    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.81
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.74
SUBAREA AREA(ACRES) =   19.46      SUBAREA RUNOFF(CFS) =   37.28
EFFECTIVE AREA(ACRES) =     83.26    AREA-AVERAGED Fm(INCH/HR) =  0.54
AREA-AVERAGED Fp(INCH/HR) =  0.84  AREA-AVERAGED Ap =  0.64
TOTAL AREA(ACRES) =     83.26        PEAK FLOW RATE(CFS) =     164.06

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.88   HALFSTREET FLOOD WIDTH(FEET) =  42.58
FLOW VELOCITY(FEET/SEC.) =  5.81   DEPTH*VELOCITY(FT*FT/SEC.) =   5.11
LONGEST FLOWPATH FROM NODE  10700.00 TO NODE  10706.00 =  2274.81 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR010706.0 TO NODE LR010707.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1557.00  DOWNSTREAM ELEVATION(FEET) = 1545.00
 STREET LENGTH(FEET) =   569.00   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 32.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.95

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     188.80
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.90
   HALFSTREET FLOOD WIDTH(FEET) =   43.55
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.32
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.67
 STREET FLOW TRAVEL TIME(MIN.) =   1.50   Tc(MIN.) =  17.86
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* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.587
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
AGRICULTURAL FAIR COVER
"ORCHARDS"                 A        0.29      0.88      1.00    44
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       A        7.84      0.98      0.60    32
AGRICULTURAL FAIR COVER
"ORCHARDS"                 B        0.50      0.63      1.00    65
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B       17.69      0.75      0.60    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.81
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.61
SUBAREA AREA(ACRES) =   26.32      SUBAREA RUNOFF(CFS) =   49.49
EFFECTIVE AREA(ACRES) =    109.58    AREA-AVERAGED Fm(INCH/HR) =  0.53
AREA-AVERAGED Fp(INCH/HR) =  0.83  AREA-AVERAGED Ap =  0.63
TOTAL AREA(ACRES) =    109.58        PEAK FLOW RATE(CFS) =     203.05

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.92   HALFSTREET FLOOD WIDTH(FEET) =  44.47
FLOW VELOCITY(FEET/SEC.) =  6.44   DEPTH*VELOCITY(FT*FT/SEC.) =   5.90
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
       AND L =  569.0 FT WITH ELEVATION-DROP =  12.0 FT, IS   68.9 CFS,
       WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  10707.00
LONGEST FLOWPATH FROM NODE  10700.00 TO NODE  10707.00 =  2843.81 FEET.

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 FLOW PROCESS FROM NODE LR010707.0 TO NODE LR010708.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1545.00  DOWNSTREAM ELEVATION(FEET) = 1528.00
 STREET LENGTH(FEET) =   629.53   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 32.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.89

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     229.50
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.91
   HALFSTREET FLOOD WIDTH(FEET) =   44.41
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.31
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.69
 STREET FLOW TRAVEL TIME(MIN.) =   1.44   Tc(MIN.) =  19.29
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 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.469
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        5.85      0.98      0.60    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       23.63      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.79
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =   29.48      SUBAREA RUNOFF(CFS) =   52.89
 EFFECTIVE AREA(ACRES) =    139.06    AREA-AVERAGED Fm(INCH/HR) =  0.52
 AREA-AVERAGED Fp(INCH/HR) =  0.82  AREA-AVERAGED Ap =  0.63
 TOTAL AREA(ACRES) =    139.06        PEAK FLOW RATE(CFS) =     244.38

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.93   HALFSTREET FLOOD WIDTH(FEET) =  45.20
 FLOW VELOCITY(FEET/SEC.) =  7.45   DEPTH*VELOCITY(FT*FT/SEC.) =   6.93

 *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
        THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.89
 SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
 ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
 ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
 ASSUME FULL-FLOWING PIPELINE
 PIPE-FLOW VELOCITY(FEET/SEC.) =  11.79
 PIPE-FLOW(CFS) =     46.92
 PIPEFLOW TRAVEL TIME(MIN.) =   0.89    Tc(MIN.) =  18.75
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.512
 SUBAREA AREA(ACRES) =   29.48      SUBAREA RUNOFF(CFS) =   54.03
 TOTAL AREA(ACRES) =    139.06        PEAK FLOW RATE(CFS) =    249.74

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  202.83
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.89
   HALFSTREET FLOOD WIDTH(FEET) =   42.94
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.03
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.23
 LONGEST FLOWPATH FROM NODE  10700.00 TO NODE  10708.00 =  3473.34 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR010708.0 TO NODE LR010709.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1528.00  DOWNSTREAM ELEVATION(FEET) = 1510.00
 STREET LENGTH(FEET) =   804.06   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 32.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
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INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.93

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     284.63
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  1.00
  HALFSTREET FLOOD WIDTH(FEET) =   48.56
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.28
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.26
STREET FLOW TRAVEL TIME(MIN.) =   1.84   Tc(MIN.) =  20.59
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.375
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       A       11.14      0.98      0.60    32
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B       29.89      0.75      0.60    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.81
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
SUBAREA AREA(ACRES) =   41.03      SUBAREA RUNOFF(CFS) =   69.76
EFFECTIVE AREA(ACRES) =    180.09    AREA-AVERAGED Fm(INCH/HR) =  0.51
AREA-AVERAGED Fp(INCH/HR) =  0.82  AREA-AVERAGED Ap =  0.62
TOTAL AREA(ACRES) =    180.09        PEAK FLOW RATE(CFS) =     302.31

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.21

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.01   HALFSTREET FLOOD WIDTH(FEET) =  49.41
FLOW VELOCITY(FEET/SEC.) =  7.41   DEPTH*VELOCITY(FT*FT/SEC.) =   7.52

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.93
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  13.00
PIPE-FLOW(CFS) =     92.00
PIPEFLOW TRAVEL TIME(MIN.) =   1.03    Tc(MIN.) =  19.78
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.433
SUBAREA AREA(ACRES) =   41.03      SUBAREA RUNOFF(CFS) =   71.90
TOTAL AREA(ACRES) =    180.09        PEAK FLOW RATE(CFS) =    311.71

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.21
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  219.71
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
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    STREET FLOW DEPTH(FEET) =  0.93
    HALFSTREET FLOOD WIDTH(FEET) =   45.08
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.74
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.26
  LONGEST FLOWPATH FROM NODE  10700.00 TO NODE  10709.00 =  4277.40 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010709.0 TO NODE LR010710.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1510.00  DOWNSTREAM ELEVATION(FEET) = 1495.00
  STREET LENGTH(FEET) =   848.55   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.99

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     350.41
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.10
    HALFSTREET FLOOD WIDTH(FEET) =   53.56
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.10
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.80
  STREET FLOW TRAVEL TIME(MIN.) =   1.99   Tc(MIN.) =  21.77
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.297
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       19.57      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       28.41      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.84
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   47.98      SUBAREA RUNOFF(CFS) =   77.40
  EFFECTIVE AREA(ACRES) =    228.07    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.83  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =    228.07        PEAK FLOW RATE(CFS) =     367.05

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.62

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.11   HALFSTREET FLOOD WIDTH(FEET) =  54.36
  FLOW VELOCITY(FEET/SEC.) =  7.19   DEPTH*VELOCITY(FT*FT/SEC.) =   8.01

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.99
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  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.41
  PIPE-FLOW(CFS) =    148.24
  PIPEFLOW TRAVEL TIME(MIN.) =   1.05    Tc(MIN.) =  20.83
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.358
  SUBAREA AREA(ACRES) =   47.98      SUBAREA RUNOFF(CFS) =   80.05
  TOTAL AREA(ACRES) =    228.07        PEAK FLOW RATE(CFS) =    379.66

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.62
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  231.41
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.97
    HALFSTREET FLOOD WIDTH(FEET) =   47.28
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.31
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.14
  LONGEST FLOWPATH FROM NODE  10700.00 TO NODE  10710.00 =  5125.95 FEET.

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  FLOW PROCESS FROM NODE LR010710.0 TO NODE LR010711.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1495.00  DOWNSTREAM ELEVATION(FEET) = 1483.00
  STREET LENGTH(FEET) =   720.09   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.00

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     397.05
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.15
    HALFSTREET FLOOD WIDTH(FEET) =   56.25
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.19
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    8.28
  STREET FLOW TRAVEL TIME(MIN.) =   1.67   Tc(MIN.) =  22.50
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.252
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        9.73      0.75      0.60    56
  RESIDENTIAL
```

```
"3-4 DWELLINGS/ACRE"       A       12.66      0.98      0.60    32
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.88
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
SUBAREA AREA(ACRES) =   22.39      SUBAREA RUNOFF(CFS) =   34.78
EFFECTIVE AREA(ACRES) =    250.46    AREA-AVERAGED Fm(INCH/HR) =  0.51
AREA-AVERAGED Fp(INCH/HR) =  0.83  AREA-AVERAGED Ap =  0.61
TOTAL AREA(ACRES) =    250.46        PEAK FLOW RATE(CFS) =     392.55

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.15   HALFSTREET FLOOD WIDTH(FEET) =  56.07
FLOW VELOCITY(FEET/SEC.) =  7.16   DEPTH*VELOCITY(FT*FT/SEC.) =   8.22

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 1.00
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  13.59
PIPE-FLOW(CFS) =    170.97
PIPEFLOW TRAVEL TIME(MIN.) =   0.88    Tc(MIN.) =  21.71
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.300
SUBAREA AREA(ACRES) =   22.39      SUBAREA RUNOFF(CFS) =   35.75
TOTAL AREA(ACRES) =    250.46        PEAK FLOW RATE(CFS) =    403.51

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  232.54
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.98
  HALFSTREET FLOOD WIDTH(FEET) =   47.77
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.19
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.07
LONGEST FLOWPATH FROM NODE  10700.00 TO NODE  10711.00 =  5846.04 FEET.

****************************************************************************
FLOW PROCESS FROM NODE LR010711.0 TO NODE LR010712.0 IS CODE =  63
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 1483.00  DOWNSTREAM ELEVATION(FEET) = 1477.00
STREET LENGTH(FEET) =  1414.25   CURB HEIGHT(INCHES) =  8.0
STREET HALFWIDTH(FEET) = 26.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
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MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     464.50
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  1.57
  HALFSTREET FLOOD WIDTH(FEET) =   70.98
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.62
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.24
STREET FLOW TRAVEL TIME(MIN.) =   5.10   Tc(MIN.) =  26.82
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.027
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       A       31.83      0.98      0.60    32
AGRICULTURAL FAIR COVER
"ORCHARDS"                 A       45.08      0.88      1.00    44
PUBLIC PARK                A        4.20      0.98      0.85    32
SCHOOL                     A        1.83      0.98      0.60    32
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B       18.12      0.75      0.60    56
SCHOOL                     B        0.93      0.75      0.60    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.89
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.79
SUBAREA AREA(ACRES) =  101.99      SUBAREA RUNOFF(CFS) =  121.77
EFFECTIVE AREA(ACRES) =    352.45    AREA-AVERAGED Fm(INCH/HR) =  0.57
AREA-AVERAGED Fp(INCH/HR) =  0.85  AREA-AVERAGED Ap =  0.66
TOTAL AREA(ACRES) =    352.45        PEAK FLOW RATE(CFS) =     463.61

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.90

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.57   HALFSTREET FLOOD WIDTH(FEET) =  70.92
FLOW VELOCITY(FEET/SEC.) =  4.62   DEPTH*VELOCITY(FT*FT/SEC.) =   7.23

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.87
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  87.00    NUMBER OF PIPES =   1
DEPTH OF FLOW IN  87.0 INCH PIPE IS  68.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  11.62
PIPE-FLOW(CFS) =    403.51
PIPEFLOW TRAVEL TIME(MIN.) =   2.03    Tc(MIN.) =  23.74
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.180
SUBAREA AREA(ACRES) =  101.99      SUBAREA RUNOFF(CFS) =  135.86
TOTAL AREA(ACRES) =    352.45        PEAK FLOW RATE(CFS) =    512.32

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.90
*NOTE: STREET-CAPACITY MAY BE EXCEEDED*
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  108.81
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.97
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    HALFSTREET FLOOD WIDTH(FEET) =   40.95
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.27
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.15
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  1414.2 FT WITH ELEVATION-DROP =   6.0 FT, IS  143.2 CFS,
         WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  10712.00
  LONGEST FLOWPATH FROM NODE  10700.00 TO NODE  10712.00 =  7260.29 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010712.0 TO NODE LR010713.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1477.00  DOWNSTREAM ELEVATION(FEET) = 1456.00
  STREET LENGTH(FEET) =  1655.07   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     611.93
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.42
    HALFSTREET FLOOD WIDTH(FEET) =   63.90
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.51
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   10.70
  STREET FLOW TRAVEL TIME(MIN.) =   3.67   Tc(MIN.) =  27.41
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.000
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 A       94.94      0.88      1.00    44
  PUBLIC PARK                A       55.36      0.98      0.85    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       14.22      0.98      0.60    32
  SCHOOL                     A       11.27      0.98      0.60    32
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        7.08      0.63      1.00    65
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.62      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.90
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.89
  SUBAREA AREA(ACRES) =  185.49      SUBAREA RUNOFF(CFS) =  198.89
  EFFECTIVE AREA(ACRES) =    537.94    AREA-AVERAGED Fm(INCH/HR) =  0.65
  AREA-AVERAGED Fp(INCH/HR) =  0.87  AREA-AVERAGED Ap =  0.74
  TOTAL AREA(ACRES) =    537.94        PEAK FLOW RATE(CFS) =     654.05

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
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  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.46

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.46   HALFSTREET FLOOD WIDTH(FEET) =  65.55
  FLOW VELOCITY(FEET/SEC.) =  7.63   DEPTH*VELOCITY(FT*FT/SEC.) =  11.12

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.87
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  78.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  78.0 INCH PIPE IS  60.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.66
  PIPE-FLOW(CFS) =    512.32
  PIPEFLOW TRAVEL TIME(MIN.) =   1.48    Tc(MIN.) =  25.22
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.103
  SUBAREA AREA(ACRES) =  185.49      SUBAREA RUNOFF(CFS) =  216.02
  TOTAL AREA(ACRES) =    537.94        PEAK FLOW RATE(CFS) =    703.72

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.46
  *NOTE: STREET-CAPACITY MAY BE EXCEEDED*
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  191.40
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.97
    HALFSTREET FLOOD WIDTH(FEET) =   41.20
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.68
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.51
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  1655.1 FT WITH ELEVATION-DROP =  21.0 FT, IS  279.3 CFS,
         WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  10713.00
  LONGEST FLOWPATH FROM NODE  10700.00 TO NODE  10713.00 =  8915.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010713.0 TO NODE LR010714.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1456.00  DOWNSTREAM ELEVATION(FEET) = 1425.00
  STREET LENGTH(FEET) =  2081.11   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     850.97
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
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  STREET FLOW DEPTH(FEET) =  1.56
  HALFSTREET FLOOD WIDTH(FEET) =   70.81
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.42
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   13.11
STREET FLOW TRAVEL TIME(MIN.) =   4.12   Tc(MIN.) =  29.34
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.920
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
PUBLIC PARK                A       76.60      0.98      0.85    32
COMMERCIAL                 A       73.07      0.98      0.10    32
AGRICULTURAL FAIR COVER
"ORCHARDS"                 A       49.11      0.88      1.00    44
PUBLIC PARK                B       12.69      0.75      0.85    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B       15.53      0.75      0.60    56
SCHOOL                     B       13.69      0.75      0.60    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.90
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.62
SUBAREA AREA(ACRES) =  240.69      SUBAREA RUNOFF(CFS) =  294.44
EFFECTIVE AREA(ACRES) =    778.63    AREA-AVERAGED Fm(INCH/HR) =  0.62
AREA-AVERAGED Fp(INCH/HR) =  0.88  AREA-AVERAGED Ap =  0.71
TOTAL AREA(ACRES) =    778.63        PEAK FLOW RATE(CFS) =     909.87

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 4.00

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.59   HALFSTREET FLOOD WIDTH(FEET) =  72.70
FLOW VELOCITY(FEET/SEC.) =  8.55   DEPTH*VELOCITY(FT*FT/SEC.) =  13.63

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.70
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  84.00    NUMBER OF PIPES =   1
DEPTH OF FLOW IN  84.0 INCH PIPE IS  67.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  21.29
PIPE-FLOW(CFS) =    703.72
PIPEFLOW TRAVEL TIME(MIN.) =   1.63    Tc(MIN.) =  26.85
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.025
SUBAREA AREA(ACRES) =  240.69      SUBAREA RUNOFF(CFS) =  317.16
TOTAL AREA(ACRES) =    778.63        PEAK FLOW RATE(CFS) =    983.35

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 4.00
*NOTE: STREET-CAPACITY MAY BE EXCEEDED*
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  279.63
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  1.05
  HALFSTREET FLOOD WIDTH(FEET) =   45.60
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.61
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.95
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
       AND L =  2081.1 FT WITH ELEVATION-DROP =  31.0 FT, IS  501.0 CFS,
       WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  10714.00
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  LONGEST FLOWPATH FROM NODE  10700.00 TO NODE  10714.00 = 10996.47 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010713.0 TO NODE LR010714.0 IS CODE =  71
----------------------------------------------------------------------------
  >>>>>PEAK FLOW RATE ESTIMATOR CHANGED TO UNIT-HYDROGRAPH METHOD<<<<<
  >>>>>USING TIME-OF-CONCENTRATION OF LONGEST FLOWPATH<<<<<
============================================================================
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.39;30M= 0.81;1H= 1.06;3H= 1.73;6H= 2.35;24H= 5.21
  S-GRAPH: VALLEY(DEV.)= 71.2%;VALLEY(UNDEV.)/DESERT= 28.8%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.45; LAG(HR) = 0.36; Fm(INCH/HR) = 0.62; Ybar = 0.65
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    778.63
  LONGEST FLOWPATH FROM NODE  10700.00 TO NODE  10714.00 = 10996.47 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0312; Lca/L=0.4,n=.0279; Lca/L=0.5,n=.0257;Lca/L=0.6,n=.0239
  TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     131.82
  UNIT-HYDROGRAPH METHOD PEAK FLOW RATE(CFS) =    808.25
  TOTAL PEAK FLOW RATE(CFS) =    808.25 (SOURCE FLOW INCLUDED)
  RATIONAL METHOD PEAK FLOW RATE(CFS) =    983.35
   (UPSTREAM NODE PEAK FLOW RATE(CFS) =    983.35)
  PEAK FLOW RATE(CFS) USED =    983.35
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =    778.63  TC(MIN.) =     26.85
  AREA-AVERAGED Fm(INCH/HR)=  0.62   Ybar =  0.65
  PEAK FLOW RATE(CFS)   =    983.35
============================================================================
============================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
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************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                           County of San Bernardino
                         Transportation Flood Control

                          Water Resources Division

------------------------------------------------------------------------
  FILE NAME: LR0108ZZ.Z13
  TIME/DATE OF STUDY: 10:40 09/13/2004
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.2500

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)     (n)
===  =====  ========  =================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
```



```
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


************************************************************************
  FLOW PROCESS FROM NODE LR010800.0 TO NODE LR010801.0 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   763.91
  ELEVATION DATA: UPSTREAM(FEET) =   1485.00  DOWNSTREAM(FEET) =   1477.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.592
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.920
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        4.06      0.98       0.60    32   14.59
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =      8.53
  TOTAL AREA(ACRES) =      4.06   PEAK FLOW RATE(CFS) =      8.53

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

************************************************************************
  FLOW PROCESS FROM NODE LR010801.0 TO NODE LR010802.0 IS CODE =  92
------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
========================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1477.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1475.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   348.45
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.674
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.83      0.75      0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.90      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.82
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     11.21
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.52
  AVERAGE FLOW DEPTH(FEET) =   0.58   FLOOD WIDTH(FEET) =   29.96
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   2.31   Tc(MIN.) =  16.90
  SUBAREA AREA(ACRES) =    2.73       SUBAREA RUNOFF(CFS) =    5.36
  EFFECTIVE AREA(ACRES) =    6.79     AREA-AVERAGED Fm(INCH/HR) =   0.55
  AREA-AVERAGED Fp(INCH/HR) =   0.91  AREA-AVERAGED Ap =   0.60
  TOTAL AREA(ACRES) =      6.79         PEAK FLOW RATE(CFS) =      12.99

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.60   FLOOD WIDTH(FEET) =   32.35
  FLOW VELOCITY(FEET/SEC.) =   2.55   DEPTH*VELOCITY(FT*FT/SEC) =   1.53
  LONGEST FLOWPATH FROM NODE  10800.00 TO NODE  10802.00 =  1112.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010802.0 TO NODE LR010803.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1475.00  DOWNSTREAM ELEVATION(FEET) = 1470.00
  STREET LENGTH(FEET) =   395.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      24.28
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.54
    HALFSTREET FLOOD WIDTH(FEET) =   19.23
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.12
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.70
  STREET FLOW TRAVEL TIME(MIN.) =   2.11   Tc(MIN.) =  19.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.492
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.16      0.75      0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       11.90      0.98      0.60    32
```



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  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.95
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   13.06      SUBAREA RUNOFF(CFS) =   22.55
  EFFECTIVE AREA(ACRES) =     19.85    AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.94  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     19.85        PEAK FLOW RATE(CFS) =      34.43

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.60   HALFSTREET FLOOD WIDTH(FEET) =  22.04
  FLOW VELOCITY(FEET/SEC.) =  3.41   DEPTH*VELOCITY(FT*FT/SEC.) =   2.04
  LONGEST FLOWPATH FROM NODE  10800.00 TO NODE  10803.00 =  1507.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010803.0 TO NODE LR010804.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1470.00  DOWNSTREAM ELEVATION(FEET) = 1465.00
  STREET LENGTH(FEET) =   436.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      46.50
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.66
    HALFSTREET FLOOD WIDTH(FEET) =   25.24
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.54
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.35
  STREET FLOW TRAVEL TIME(MIN.) =   2.05   Tc(MIN.) =  21.05
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.343
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       15.25      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   15.25      SUBAREA RUNOFF(CFS) =   24.13
  EFFECTIVE AREA(ACRES) =     35.10    AREA-AVERAGED Fm(INCH/HR) =  0.57
  AREA-AVERAGED Fp(INCH/HR) =  0.96  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     35.10        PEAK FLOW RATE(CFS) =      55.90

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
```

```
  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.70   HALFSTREET FLOOD WIDTH(FEET) =  28.81
  FLOW VELOCITY(FEET/SEC.) =  3.69   DEPTH*VELOCITY(FT*FT/SEC.) =   2.59
  LONGEST FLOWPATH FROM NODE  10800.00 TO NODE  10804.00 =  1943.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010804.0 TO NODE LR010805.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1465.00  DOWNSTREAM ELEVATION(FEET) = 1460.00
  STREET LENGTH(FEET) =   800.06   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      75.74
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.83
    HALFSTREET FLOOD WIDTH(FEET) =   40.20
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.12
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.59
  STREET FLOW TRAVEL TIME(MIN.) =   4.27   Tc(MIN.) =  25.33
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.097
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       12.48      0.98      0.60    32
  MOBILE HOME PARK           A        9.98      0.98      0.25    32
  SCHOOL                     A        4.41      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.47
  SUBAREA AREA(ACRES) =   26.87      SUBAREA RUNOFF(CFS) =   39.63
  EFFECTIVE AREA(ACRES) =     61.97    AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.96  AREA-AVERAGED Ap =  0.54
  TOTAL AREA(ACRES) =     61.97        PEAK FLOW RATE(CFS) =      87.77

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.86   HALFSTREET FLOOD WIDTH(FEET) =  41.72
  FLOW VELOCITY(FEET/SEC.) =  3.28   DEPTH*VELOCITY(FT*FT/SEC.) =   2.82
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  800.1 FT WITH ELEVATION-DROP =   5.0 FT, IS   63.1 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  10805.00
  LONGEST FLOWPATH FROM NODE  10800.00 TO NODE  10805.00 =  2743.42 FEET.
```



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****************************************************************************
  FLOW PROCESS FROM NODE LR010805.0 TO NODE LR010806.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1460.00  DOWNSTREAM ELEVATION(FEET) = 1420.00
  STREET LENGTH(FEET) =  1682.03   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.92

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     125.37
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.80
    HALFSTREET FLOOD WIDTH(FEET) =   38.50
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.79
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.61
  STREET FLOW TRAVEL TIME(MIN.) =   4.84   Tc(MIN.) =  30.17
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.888
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A       25.95      0.98      0.25    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       16.72      0.98      0.60    32
  SCHOOL                     A       14.61      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.44
  SUBAREA AREA(ACRES) =   57.28      SUBAREA RUNOFF(CFS) =   75.15
  EFFECTIVE AREA(ACRES) =    119.25    AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.49
  TOTAL AREA(ACRES) =    119.25        PEAK FLOW RATE(CFS) =     151.26

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.84   HALFSTREET FLOOD WIDTH(FEET) =  40.44
  FLOW VELOCITY(FEET/SEC.) =  6.13   DEPTH*VELOCITY(FT*FT/SEC.) =   5.12
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1682.0 FT WITH ELEVATION-DROP =  40.0 FT, IS  133.1 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  10806.00
  LONGEST FLOWPATH FROM NODE  10800.00 TO NODE  10806.00 =  4425.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010806.0 TO NODE LR010807.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) = 1420.00  DOWNSTREAM ELEVATION(FEET) = 1392.00
  STREET LENGTH(FEET) =  1712.03   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.01

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     183.29
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.92
    HALFSTREET FLOOD WIDTH(FEET) =   44.77
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.72
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.27
  STREET FLOW TRAVEL TIME(MIN.) =   4.99   Tc(MIN.) =  35.16
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.722
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       44.48      0.98      0.60    32
  MOBILE HOME PARK           A        4.71      0.98      0.25    32
  COMMERCIAL                 A        8.32      0.98      0.10    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =   57.51      SUBAREA RUNOFF(CFS) =   63.97
  EFFECTIVE AREA(ACRES) =    176.76    AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =    176.76        PEAK FLOW RATE(CFS) =     197.45

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.94   HALFSTREET FLOOD WIDTH(FEET) =  45.69
  FLOW VELOCITY(FEET/SEC.) =  5.86   DEPTH*VELOCITY(FT*FT/SEC.) =   5.51
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1712.0 FT WITH ELEVATION-DROP =  28.0 FT, IS  132.5 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  10807.00
  LONGEST FLOWPATH FROM NODE  10800.00 TO NODE  10807.00 =  6137.48 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010807.0 TO NODE LR010808.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) = 1392.00  DOWNSTREAM ELEVATION(FEET) = 1388.00
  STREET LENGTH(FEET) =  1412.25   CURB HEIGHT(INCHES) =  8.0
```



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  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     261.11
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.38
    HALFSTREET FLOOD WIDTH(FEET) =   61.46
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.47
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.77
  STREET FLOW TRAVEL TIME(MIN.) =   6.79   Tc(MIN.) =  41.95
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.549
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       86.38      0.98      0.60    32
  MOBILE HOME PARK           A       40.31      0.98      0.25    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.86      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.96
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.49
  SUBAREA AREA(ACRES) =  131.55      SUBAREA RUNOFF(CFS) =  127.15
  EFFECTIVE AREA(ACRES) =    308.31    AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.49
  TOTAL AREA(ACRES) =    308.31        PEAK FLOW RATE(CFS) =     297.06

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.44   HALFSTREET FLOOD WIDTH(FEET) =  64.57
  FLOW VELOCITY(FEET/SEC.) =  3.57   DEPTH*VELOCITY(FT*FT/SEC.) =   5.14

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 1.07
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  72.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  72.0 INCH PIPE IS  56.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.36
  PIPE-FLOW(CFS) =    197.45
  PIPEFLOW TRAVEL TIME(MIN.) =   2.81    Tc(MIN.) =  37.98
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.645
  SUBAREA AREA(ACRES) =  131.55      SUBAREA RUNOFF(CFS) =  138.44
  TOTAL AREA(ACRES) =    308.31        PEAK FLOW RATE(CFS) =    323.52

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
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  *NOTE: STREET-CAPACITY MAY BE EXCEEDED*
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  126.07
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.08
    HALFSTREET FLOOD WIDTH(FEET) =   46.57
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.92
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.15
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  1412.2 FT WITH ELEVATION-DROP =   4.0 FT, IS  231.9 CFS,
         WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  10808.00
  LONGEST FLOWPATH FROM NODE  10800.00 TO NODE  10808.00 =  7549.73 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010808.0 TO NODE LR010809.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1388.00  DOWNSTREAM ELEVATION(FEET) = 1384.00
  STREET LENGTH(FEET) =  1356.38   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     391.64
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.57
    HALFSTREET FLOOD WIDTH(FEET) =   71.29
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.86
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.07
  STREET FLOW TRAVEL TIME(MIN.) =   5.85   Tc(MIN.) =  43.83
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.509
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        6.18      0.75      0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A      156.51      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =  162.69      SUBAREA RUNOFF(CFS) =  136.07
  EFFECTIVE AREA(ACRES) =    471.00    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.53
  TOTAL AREA(ACRES) =    471.00        PEAK FLOW RATE(CFS) =     421.98

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
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  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.51

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.61   HALFSTREET FLOOD WIDTH(FEET) =  73.36
  FLOW VELOCITY(FEET/SEC.) =  3.93   DEPTH*VELOCITY(FT*FT/SEC.) =   6.34

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 1.07
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  87.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  87.0 INCH PIPE IS  65.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.65
  PIPE-FLOW(CFS) =    323.52
  PIPEFLOW TRAVEL TIME(MIN.) =   2.34    Tc(MIN.) =  40.32
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.587
  SUBAREA AREA(ACRES) =  162.69      SUBAREA RUNOFF(CFS) =  147.43
  TOTAL AREA(ACRES) =    471.00        PEAK FLOW RATE(CFS) =    454.86

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.51
  *NOTE: STREET-CAPACITY MAY BE EXCEEDED*
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  131.34
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.09
    HALFSTREET FLOOD WIDTH(FEET) =   46.93
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.00
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.25
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  1356.4 FT WITH ELEVATION-DROP =   4.0 FT, IS  235.0 CFS,
         WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  10809.00
  LONGEST FLOWPATH FROM NODE  10800.00 TO NODE  10809.00 =  8906.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010809.0 TO NODE LR010810.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1384.00  DOWNSTREAM ELEVATION(FEET) = 1382.00
  STREET LENGTH(FEET) =  1169.35   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     511.96
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
```

```
  STREET FLOW DEPTH(FEET) =  1.91
  HALFSTREET FLOOD WIDTH(FEET) =   87.95
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.31
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.32
STREET FLOW TRAVEL TIME(MIN.) =   5.88   Tc(MIN.) =  46.20
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.462
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       A       85.15      0.98      0.60    32
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B       51.42      0.75      0.60    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.89
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
SUBAREA AREA(ACRES) =  136.57      SUBAREA RUNOFF(CFS) =  114.13
EFFECTIVE AREA(ACRES) =    607.57    AREA-AVERAGED Fm(INCH/HR) =  0.52
AREA-AVERAGED Fp(INCH/HR) =  0.95  AREA-AVERAGED Ap =  0.55
TOTAL AREA(ACRES) =    607.57        PEAK FLOW RATE(CFS) =     516.23

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.66

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.91   HALFSTREET FLOOD WIDTH(FEET) =  88.19
FLOW VELOCITY(FEET/SEC.) =  3.32   DEPTH*VELOCITY(FT*FT/SEC.) =   6.35

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 1.07
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) = 108.00    NUMBER OF PIPES =   1
DEPTH OF FLOW IN 108.0 INCH PIPE IS  84.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   8.52
PIPE-FLOW(CFS) =    454.86
PIPEFLOW TRAVEL TIME(MIN.) =   2.29    Tc(MIN.) =  42.61
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.535
SUBAREA AREA(ACRES) =  136.57      SUBAREA RUNOFF(CFS) =  123.08
TOTAL AREA(ACRES) =    607.57        PEAK FLOW RATE(CFS) =    556.03

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.66
*NOTE: STREET-CAPACITY MAY BE EXCEEDED*
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  101.17
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  1.09
  HALFSTREET FLOOD WIDTH(FEET) =   47.18
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.28
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.49
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
       AND L =  1169.3 FT WITH ELEVATION-DROP =   2.0 FT, IS  195.1 CFS,
       WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  10810.00
LONGEST FLOWPATH FROM NODE  10800.00 TO NODE  10810.00 = 10075.46 FEET.

****************************************************************************
FLOW PROCESS FROM NODE LR010810.0 TO NODE LR010811.0 IS CODE =  33
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----------------------------------------------------------------------------
 >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
 >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1382.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1350.00
 FLOW LENGTH(FEET) =  1164.14   MANNING'S N =  0.013

 USER SPECIFIED PIPE DIAMETER(INCH) =  66.00    NUMBER OF PIPES =   1
 USER SPECIFIED PIPE SYSTEM UNDER PRESSURE
 PIPE-FLOW VELOCITY(FEET/SEC.) =  21.59
 PIPE-FLOW(CFS) =    513.41
 PIPEFLOW TRAVEL TIME(MIN.) =   0.90    Tc(MIN.) =  43.50
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.516
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL FAIR COVER
 "ORCHARDS"                 A       67.01      0.88      1.00    44
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A       27.08      0.98      0.60    32
 AGRICULTURAL FAIR COVER
 "ORCHARDS"                 B       32.87      0.63      1.00    65
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.20      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.82
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.91
 SUBAREA AREA(ACRES) =  127.16      SUBAREA RUNOFF(CFS) =   87.44
 EFFECTIVE AREA(ACRES) =    734.73    AREA-AVERAGED Fm(INCH/HR) =  0.56
 AREA-AVERAGED Fp(INCH/HR) =  0.92  AREA-AVERAGED Ap =  0.61
 TOTAL AREA(ACRES) =    734.73        PEAK FLOW RATE(CFS) =    633.02

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.79

 STREET CROSS-SECTION INFORMATION:
 CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 26.00
 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.83
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  119.61
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.76
   HALFSTREET FLOOD WIDTH(FEET) =   30.52
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.50
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.92
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  1164.1 FT WITH ELEVATION-DROP =  32.0 FT, IS  253.0 CFS,
        WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  10811.00
 LONGEST FLOWPATH FROM NODE  10800.00 TO NODE  10811.00 = 11239.60 FEET.
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****************************************************************************
  FLOW PROCESS FROM NODE LR010810.0 TO NODE LR010811.0 IS CODE =  71
----------------------------------------------------------------------------
  >>>>>PEAK FLOW RATE ESTIMATOR CHANGED TO UNIT-HYDROGRAPH METHOD<<<<<
  >>>>>USING TIME-OF-CONCENTRATION OF LONGEST FLOWPATH<<<<<
============================================================================
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.46;30M= 0.95;1H= 1.25;3H= 2.03;6H= 2.75;24H= 5.58
  S-GRAPH: VALLEY(DEV.)= 86.4%;VALLEY(UNDEV.)/DESERT= 13.6%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.73; LAG(HR) = 0.58; Fm(INCH/HR) = 0.56; Ybar = 0.58
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 1.00; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    734.73
  LONGEST FLOWPATH FROM NODE  10800.00 TO NODE  10811.00 = 11239.60 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0473; Lca/L=0.4,n=.0424; Lca/L=0.5,n=.0390;Lca/L=0.6,n=.0364
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     158.95
  UNIT-HYDROGRAPH METHOD PEAK FLOW RATE(CFS) =    708.76
  TOTAL PEAK FLOW RATE(CFS) =    708.76 (SOURCE FLOW INCLUDED)
  RATIONAL METHOD PEAK FLOW RATE(CFS) =    633.02
   (UPSTREAM NODE PEAK FLOW RATE(CFS) =    633.02)
  PEAK FLOW RATE(CFS) USED =    708.76
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =    734.73  TC(MIN.) =     43.50
  AREA-AVERAGED Fm(INCH/HR)=  0.56   Ybar =  0.58
  PEAK FLOW RATE(CFS)   =    708.76
============================================================================
============================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
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 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                           County of San Bernardino
                         Transportation Flood Control

                          Water Resources Division

 ------------------------------------------------------------------------
  FILE NAME: LR0109ZZ.Z13
  TIME/DATE OF STUDY: 10:41 09/13/2004
 ========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
 ========================================================================
                     --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.2500

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)     (n)
===  =====  ========  =================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
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    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


 ************************************************************************
  FLOW PROCESS FROM NODE LR010900.0 TO NODE LR010901.0 IS CODE =  21
 ------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
 ========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   952.49
  ELEVATION DATA: UPSTREAM(FEET) =   1385.00  DOWNSTREAM(FEET) =   1378.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   17.108
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.654
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        5.69      0.98       0.60    32   17.11
  PUBLIC PARK                A        3.97      0.98       0.85    32   20.06
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA RUNOFF(CFS) =     17.12
  TOTAL AREA(ACRES) =      9.66   PEAK FLOW RATE(CFS) =     17.12

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.59

 ************************************************************************
  FLOW PROCESS FROM NODE LR010901.0 TO NODE LR010902.0 IS CODE =  62
 ------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
 ========================================================================
  UPSTREAM ELEVATION(FEET) = 1378.00  DOWNSTREAM ELEVATION(FEET) = 1376.00
  STREET LENGTH(FEET) =   238.62   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
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  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      25.18
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.58
    HALFSTREET FLOOD WIDTH(FEET) =   21.11
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.71
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.57
  STREET FLOW TRAVEL TIME(MIN.) =   1.47   Tc(MIN.) =  18.57
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.526
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        4.92      0.98      0.60    32
  PUBLIC PARK                A        4.93      0.98      0.85    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.73
  SUBAREA AREA(ACRES) =    9.85      SUBAREA RUNOFF(CFS) =   16.13
  EFFECTIVE AREA(ACRES) =     19.51    AREA-AVERAGED Fm(INCH/HR) =  0.70
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.71
  TOTAL AREA(ACRES) =     19.51        PEAK FLOW RATE(CFS) =      32.13

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.59

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.62   HALFSTREET FLOOD WIDTH(FEET) =  23.28
  FLOW VELOCITY(FEET/SEC.) =  2.87   DEPTH*VELOCITY(FT*FT/SEC.) =   1.79
  LONGEST FLOWPATH FROM NODE  10900.00 TO NODE  10902.00 =  1191.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010902.0 TO NODE LR010903.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1376.00  DOWNSTREAM ELEVATION(FEET) = 1372.00
  STREET LENGTH(FEET) =   237.43   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.97

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      39.94
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.60
    HALFSTREET FLOOD WIDTH(FEET) =   22.10
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.93
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    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.36
  STREET FLOW TRAVEL TIME(MIN.) =   1.01   Tc(MIN.) =  19.58
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.447
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        5.02      0.98      0.60    32
  PUBLIC PARK                A        4.30      0.98      0.85    32
  SCHOOL                     A        0.56      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.71
  SUBAREA AREA(ACRES) =    9.88      SUBAREA RUNOFF(CFS) =   15.62
  EFFECTIVE AREA(ACRES) =     29.39    AREA-AVERAGED Fm(INCH/HR) =  0.69
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.71
  TOTAL AREA(ACRES) =     29.39        PEAK FLOW RATE(CFS) =      46.37

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.63   HALFSTREET FLOOD WIDTH(FEET) =  23.39
  FLOW VELOCITY(FEET/SEC.) =  4.09   DEPTH*VELOCITY(FT*FT/SEC.) =   2.56
  LONGEST FLOWPATH FROM NODE  10900.00 TO NODE  10903.00 =  1428.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010903.0 TO NODE LR010904.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1372.00  DOWNSTREAM ELEVATION(FEET) = 1369.00
  STREET LENGTH(FEET) =   248.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.06

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      54.28
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.69
    HALFSTREET FLOOD WIDTH(FEET) =   27.04
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.77
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.59
  STREET FLOW TRAVEL TIME(MIN.) =   1.10   Tc(MIN.) =  20.68
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.369
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
```

```
  "3-4 DWELLINGS/ACRE"       A        4.65      0.98      0.60    32
  SCHOOL                     A        5.21      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    9.86      SUBAREA RUNOFF(CFS) =   15.83
  EFFECTIVE AREA(ACRES) =     39.25    AREA-AVERAGED Fm(INCH/HR) =  0.67
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     39.25        PEAK FLOW RATE(CFS) =      60.11

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.70   HALFSTREET FLOOD WIDTH(FEET) =  27.89
  FLOW VELOCITY(FEET/SEC.) =  3.92   DEPTH*VELOCITY(FT*FT/SEC.) =   2.76
  LONGEST FLOWPATH FROM NODE  10900.00 TO NODE  10904.00 =  1677.04 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010904.0 TO NODE LR010905.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1369.00  DOWNSTREAM ELEVATION(FEET) = 1366.00
  STREET LENGTH(FEET) =   298.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      69.13
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.75
    HALFSTREET FLOOD WIDTH(FEET) =   30.03
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.88
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.90
  STREET FLOW TRAVEL TIME(MIN.) =   1.28   Tc(MIN.) =  21.96
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.285
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        5.98      0.98      0.60    32
  SCHOOL                     A        5.81      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   11.79      SUBAREA RUNOFF(CFS) =   18.03
  EFFECTIVE AREA(ACRES) =     51.04    AREA-AVERAGED Fm(INCH/HR) =  0.65
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.66
  TOTAL AREA(ACRES) =     51.04        PEAK FLOW RATE(CFS) =      75.18
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  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.76   HALFSTREET FLOOD WIDTH(FEET) =  30.88
  FLOW VELOCITY(FEET/SEC.) =  3.99   DEPTH*VELOCITY(FT*FT/SEC.) =   3.05
  LONGEST FLOWPATH FROM NODE  10900.00 TO NODE  10905.00 =  1975.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010905.0 TO NODE LR010906.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1366.00  DOWNSTREAM ELEVATION(FEET) = 1362.00
  STREET LENGTH(FEET) =   305.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.04

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      84.60
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.76
    HALFSTREET FLOOD WIDTH(FEET) =   30.76
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.52
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.45
  STREET FLOW TRAVEL TIME(MIN.) =   1.13   Tc(MIN.) =  23.09
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.217
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        6.54      0.98      0.60    32
  SCHOOL                     A        6.29      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   12.83      SUBAREA RUNOFF(CFS) =   18.85
  EFFECTIVE AREA(ACRES) =     63.87    AREA-AVERAGED Fm(INCH/HR) =  0.64
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.65
  TOTAL AREA(ACRES) =     63.87        PEAK FLOW RATE(CFS) =      90.92

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.78   HALFSTREET FLOOD WIDTH(FEET) =  31.49
  FLOW VELOCITY(FEET/SEC.) =  4.64   DEPTH*VELOCITY(FT*FT/SEC.) =   3.60
  LONGEST FLOWPATH FROM NODE  10900.00 TO NODE  10906.00 =  2281.04 FEET.
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****************************************************************************
  FLOW PROCESS FROM NODE LR010906.0 TO NODE LR010907.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1362.00  DOWNSTREAM ELEVATION(FEET) = 1355.00
  STREET LENGTH(FEET) =   419.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.97

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     102.72
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.78
    HALFSTREET FLOOD WIDTH(FEET) =   31.49
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.24
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.07
  STREET FLOW TRAVEL TIME(MIN.) =   1.33   Tc(MIN.) =  24.42
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.144
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       14.56      0.98      0.60    32
  SCHOOL                     A        2.26      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   16.82      SUBAREA RUNOFF(CFS) =   23.59
  EFFECTIVE AREA(ACRES) =     80.69    AREA-AVERAGED Fm(INCH/HR) =  0.62
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.64
  TOTAL AREA(ACRES) =     80.69        PEAK FLOW RATE(CFS) =     110.29

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.79   HALFSTREET FLOOD WIDTH(FEET) =  32.29
  FLOW VELOCITY(FEET/SEC.) =  5.35   DEPTH*VELOCITY(FT*FT/SEC.) =   4.24
  LONGEST FLOWPATH FROM NODE  10900.00 TO NODE  10907.00 =  2700.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010907.0 TO NODE LR010908.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1355.00  DOWNSTREAM ELEVATION(FEET) = 1347.00
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  STREET LENGTH(FEET) =   391.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.92

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     121.33
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.79
    HALFSTREET FLOOD WIDTH(FEET) =   32.23
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.91
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.67
  STREET FLOW TRAVEL TIME(MIN.) =   1.10   Tc(MIN.) =  25.52
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.087
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       15.01      0.98      0.60    32
  COMMERCIAL                 A        0.76      0.98      0.10    32
  MOBILE HOME PARK           A        0.25      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.57
  SUBAREA AREA(ACRES) =   16.02      SUBAREA RUNOFF(CFS) =   22.07
  EFFECTIVE AREA(ACRES) =     96.71    AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.63
  TOTAL AREA(ACRES) =     96.71        PEAK FLOW RATE(CFS) =     128.29

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.80   HALFSTREET FLOOD WIDTH(FEET) =  32.84
  FLOW VELOCITY(FEET/SEC.) =  6.01   DEPTH*VELOCITY(FT*FT/SEC.) =   4.83
  LONGEST FLOWPATH FROM NODE  10900.00 TO NODE  10908.00 =  3091.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010908.0 TO NODE LR010909.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1347.00  DOWNSTREAM ELEVATION(FEET) = 1342.00
  STREET LENGTH(FEET) =   248.60   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
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  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.92

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     135.89
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.82
    HALFSTREET FLOOD WIDTH(FEET) =   33.57
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.09
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.98
  STREET FLOW TRAVEL TIME(MIN.) =   0.68   Tc(MIN.) =  26.21
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.055
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        5.32      0.98      0.60    32
  COMMERCIAL                 A        3.33      0.98      0.10    32
  MOBILE HOME PARK           A        1.41      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.39
  SUBAREA AREA(ACRES) =   10.06      SUBAREA RUNOFF(CFS) =   15.20
  EFFECTIVE AREA(ACRES) =    106.77    AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.61
  TOTAL AREA(ACRES) =    106.77        PEAK FLOW RATE(CFS) =     140.65

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.83   HALFSTREET FLOOD WIDTH(FEET) =  34.00
  FLOW VELOCITY(FEET/SEC.) =  6.14   DEPTH*VELOCITY(FT*FT/SEC.) =   5.08
  LONGEST FLOWPATH FROM NODE  10900.00 TO NODE  10909.00 =  3340.14 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010909.0 TO NODE LR010910.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1342.00  DOWNSTREAM ELEVATION(FEET) = 1337.00
  STREET LENGTH(FEET) =  1292.38   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     157.65
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    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.10
    HALFSTREET FLOOD WIDTH(FEET) =   47.79
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.47
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.82
  STREET FLOW TRAVEL TIME(MIN.) =   6.21   Tc(MIN.) =  32.42
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.809
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       30.86      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   30.86      SUBAREA RUNOFF(CFS) =   33.99
  EFFECTIVE AREA(ACRES) =    137.63    AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =    137.63        PEAK FLOW RATE(CFS) =     150.98

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.09   HALFSTREET FLOOD WIDTH(FEET) =  47.00
  FLOW VELOCITY(FEET/SEC.) =  3.44   DEPTH*VELOCITY(FT*FT/SEC.) =   3.73

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 1.07
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.46
  PIPE-FLOW(CFS) =     17.76
  PIPEFLOW TRAVEL TIME(MIN.) =   4.83    Tc(MIN.) =  31.03
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.857
  SUBAREA AREA(ACRES) =   30.86      SUBAREA RUNOFF(CFS) =   35.32
  TOTAL AREA(ACRES) =    137.63        PEAK FLOW RATE(CFS) =    156.92

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  139.16
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.06
    HALFSTREET FLOOD WIDTH(FEET) =   45.59
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.37
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.56
  LONGEST FLOWPATH FROM NODE  10900.00 TO NODE  10910.00 =  4632.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR010910.0 TO NODE LR010911.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
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UPSTREAM ELEVATION(FEET) = 1337.00  DOWNSTREAM ELEVATION(FEET) = 1330.00
STREET LENGTH(FEET) =  1342.00   CURB HEIGHT(INCHES) =  8.0
STREET HALFWIDTH(FEET) = 26.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     192.58
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  1.12
  HALFSTREET FLOOD WIDTH(FEET) =   48.70
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.08
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.57
STREET FLOW TRAVEL TIME(MIN.) =   5.48   Tc(MIN.) =  36.52
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.684
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
PUBLIC PARK                A        0.46      0.98      0.85    32
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       A       71.69      0.98      0.60    32
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
SUBAREA AREA(ACRES) =   72.15      SUBAREA RUNOFF(CFS) =   71.25
EFFECTIVE AREA(ACRES) =    209.78    AREA-AVERAGED Fm(INCH/HR) =  0.59
AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.60
TOTAL AREA(ACRES) =    209.78        PEAK FLOW RATE(CFS) =     206.78

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.15   HALFSTREET FLOOD WIDTH(FEET) =  50.05
FLOW VELOCITY(FEET/SEC.) =  4.15   DEPTH*VELOCITY(FT*FT/SEC.) =   4.76

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 1.07
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =   6.62
PIPE-FLOW(CFS) =     54.98
PIPEFLOW TRAVEL TIME(MIN.) =   3.38    Tc(MIN.) =  34.41
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.745
SUBAREA AREA(ACRES) =   72.15      SUBAREA RUNOFF(CFS) =   75.22
TOTAL AREA(ACRES) =    209.78        PEAK FLOW RATE(CFS) =    218.32

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
```



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  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  163.34
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.06
    HALFSTREET FLOOD WIDTH(FEET) =   45.77
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.92
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.16
  LONGEST FLOWPATH FROM NODE  10900.00 TO NODE  10911.00 =  5974.52 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =    209.78  TC(MIN.) =     34.41
  EFFECTIVE AREA(ACRES) =    209.78  AREA-AVERAGED Fm(INCH/HR)=  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.60
  PEAK FLOW RATE(CFS)   =    218.32
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

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**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                           County of San Bernardino
                         Transportation Flood Control

                           Water Resources Division

--------------------------------------------------------------------------
  FILE NAME: LR0110ZZ.Z13
  TIME/DATE OF STUDY: 10:42 09/13/2004
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.2500

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)     (n)
===  =====  ========  =================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
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    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


**************************************************************************
  FLOW PROCESS FROM NODE LR011000.0 TO NODE LR011001.0 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   604.68
  ELEVATION DATA: UPSTREAM(FEET) =   1395.00  DOWNSTREAM(FEET) =   1385.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.891
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.687
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.70      0.98       0.60    32   12.13
  PUBLIC PARK                A        2.08      0.98       0.85    32   14.22
  MOBILE HOME PARK           A        2.84      0.98       0.25    32    9.89
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.53
  SUBAREA RUNOFF(CFS) =     18.90
  TOTAL AREA(ACRES) =      6.62   PEAK FLOW RATE(CFS) =     18.90

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

**************************************************************************
  FLOW PROCESS FROM NODE LR011001.0 TO NODE LR011002.0 IS CODE =  63
--------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
==========================================================================
  UPSTREAM ELEVATION(FEET) = 1385.00  DOWNSTREAM ELEVATION(FEET) = 1382.00
  STREET LENGTH(FEET) =   171.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
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  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      23.81
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.49
    HALFSTREET FLOOD WIDTH(FEET) =   18.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.51
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.71
  STREET FLOW TRAVEL TIME(MIN.) =   0.81   Tc(MIN.) =  10.70
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.516
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                A        1.41      0.98      0.85    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.24      0.98      0.60    32
  MOBILE HOME PARK           A        1.96      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.51
  SUBAREA AREA(ACRES) =    3.61      SUBAREA RUNOFF(CFS) =    9.82
  EFFECTIVE AREA(ACRES) =     10.23    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.52
  TOTAL AREA(ACRES) =     10.23        PEAK FLOW RATE(CFS) =      27.70

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.51   HALFSTREET FLOOD WIDTH(FEET) =  18.26
  FLOW VELOCITY(FEET/SEC.) =  3.74   DEPTH*VELOCITY(FT*FT/SEC.) =   1.89
  LONGEST FLOWPATH FROM NODE  11000.00 TO NODE  11002.00 =   775.68 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011002.0 TO NODE LR011003.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1382.00  DOWNSTREAM ELEVATION(FEET) = 1377.00
  STREET LENGTH(FEET) =   241.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      33.84
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    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.52
    HALFSTREET FLOOD WIDTH(FEET) =   19.05
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.24
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.21
  STREET FLOW TRAVEL TIME(MIN.) =   0.95   Tc(MIN.) =  11.65
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.341
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                A        1.71      0.98      0.85    32
  SCHOOL                     A        0.19      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.72      0.98      0.60    32
  MOBILE HOME PARK           A        2.21      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.53
  SUBAREA AREA(ACRES) =    4.83      SUBAREA RUNOFF(CFS) =   12.29
  EFFECTIVE AREA(ACRES) =     15.06    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.52
  TOTAL AREA(ACRES) =     15.06        PEAK FLOW RATE(CFS) =      38.37

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.54   HALFSTREET FLOOD WIDTH(FEET) =  19.91
  FLOW VELOCITY(FEET/SEC.) =  4.43   DEPTH*VELOCITY(FT*FT/SEC.) =   2.39
  LONGEST FLOWPATH FROM NODE  11000.00 TO NODE  11003.00 =  1017.18 FEET.

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  FLOW PROCESS FROM NODE LR011003.0 TO NODE LR011004.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1377.00  DOWNSTREAM ELEVATION(FEET) = 1374.00
  STREET LENGTH(FEET) =   241.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      44.32
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.60
    HALFSTREET FLOOD WIDTH(FEET) =   23.02
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.91
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.35
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  STREET FLOW TRAVEL TIME(MIN.) =   1.03   Tc(MIN.) =  12.68
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.176
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  SCHOOL                     A        2.11      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        2.99      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    5.10      SUBAREA RUNOFF(CFS) =   11.89
  EFFECTIVE AREA(ACRES) =     20.16    AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.54
  TOTAL AREA(ACRES) =     20.16        PEAK FLOW RATE(CFS) =      48.02

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.61   HALFSTREET FLOOD WIDTH(FEET) =  23.69
  FLOW VELOCITY(FEET/SEC.) =  4.02   DEPTH*VELOCITY(FT*FT/SEC.) =   2.47
  LONGEST FLOWPATH FROM NODE  11000.00 TO NODE  11004.00 =  1258.68 FEET.

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  FLOW PROCESS FROM NODE LR011004.0 TO NODE LR011005.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1374.00  DOWNSTREAM ELEVATION(FEET) = 1369.00
  STREET LENGTH(FEET) =   284.59   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      54.70
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.61
    HALFSTREET FLOOD WIDTH(FEET) =   23.32
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.71
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.86
  STREET FLOW TRAVEL TIME(MIN.) =   1.01   Tc(MIN.) =  13.69
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.034
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  SCHOOL                     A        2.36      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        3.70      0.98      0.60    32
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  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    6.06      SUBAREA RUNOFF(CFS) =   13.36
  EFFECTIVE AREA(ACRES) =     26.22    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.56
  TOTAL AREA(ACRES) =     26.22        PEAK FLOW RATE(CFS) =      58.80

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.62   HALFSTREET FLOOD WIDTH(FEET) =  24.00
  FLOW VELOCITY(FEET/SEC.) =  4.80   DEPTH*VELOCITY(FT*FT/SEC.) =   2.98
  LONGEST FLOWPATH FROM NODE  11000.00 TO NODE  11005.00 =  1543.27 FEET.

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  FLOW PROCESS FROM NODE LR011005.0 TO NODE LR011006.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1369.00  DOWNSTREAM ELEVATION(FEET) = 1363.00
  STREET LENGTH(FEET) =   305.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      65.32
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.63
    HALFSTREET FLOOD WIDTH(FEET) =   24.42
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.16
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.24
  STREET FLOW TRAVEL TIME(MIN.) =   0.99   Tc(MIN.) =  14.68
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.910
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  SCHOOL                     A        2.52      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        3.72      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    6.24      SUBAREA RUNOFF(CFS) =   13.05
  EFFECTIVE AREA(ACRES) =     32.46    AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.56
  TOTAL AREA(ACRES) =     32.46        PEAK FLOW RATE(CFS) =      68.92

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
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  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.64   HALFSTREET FLOOD WIDTH(FEET) =  24.91
  FLOW VELOCITY(FEET/SEC.) =  5.24   DEPTH*VELOCITY(FT*FT/SEC.) =   3.35
  LONGEST FLOWPATH FROM NODE  11000.00 TO NODE  11006.00 =  1848.77 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011006.0 TO NODE LR011007.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1363.00  DOWNSTREAM ELEVATION(FEET) = 1355.00
  STREET LENGTH(FEET) =   426.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      78.70
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.67
    HALFSTREET FLOOD WIDTH(FEET) =   26.44
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.35
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.58
  STREET FLOW TRAVEL TIME(MIN.) =   1.33   Tc(MIN.) =  16.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.762
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  SCHOOL                     A        5.15      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        4.83      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    9.98      SUBAREA RUNOFF(CFS) =   19.56
  EFFECTIVE AREA(ACRES) =     42.44    AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.57
  TOTAL AREA(ACRES) =     42.44        PEAK FLOW RATE(CFS) =      84.17

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.68   HALFSTREET FLOOD WIDTH(FEET) =  27.17
  FLOW VELOCITY(FEET/SEC.) =  5.43   DEPTH*VELOCITY(FT*FT/SEC.) =   3.71
  LONGEST FLOWPATH FROM NODE  11000.00 TO NODE  11007.00 =  2275.27 FEET.

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  FLOW PROCESS FROM NODE LR011007.0 TO NODE LR011008.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1355.00  DOWNSTREAM ELEVATION(FEET) = 1350.00
  STREET LENGTH(FEET) =   383.57   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      92.83
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.75
    HALFSTREET FLOOD WIDTH(FEET) =   30.28
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.87
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.63
  STREET FLOW TRAVEL TIME(MIN.) =   1.31   Tc(MIN.) =  17.32
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.634
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        3.55      0.98      0.60    32
  MOBILE HOME PARK           A        0.33      0.98      0.25    32
  SCHOOL                     A        5.45      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.59
  SUBAREA AREA(ACRES) =    9.33      SUBAREA RUNOFF(CFS) =   17.31
  EFFECTIVE AREA(ACRES) =     51.77    AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.58
  TOTAL AREA(ACRES) =     51.77        PEAK FLOW RATE(CFS) =      96.61

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.76   HALFSTREET FLOOD WIDTH(FEET) =  30.77
  FLOW VELOCITY(FEET/SEC.) =  4.91   DEPTH*VELOCITY(FT*FT/SEC.) =   3.71
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  383.6 FT WITH ELEVATION-DROP =   5.0 FT, IS   28.7 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  11008.00
  LONGEST FLOWPATH FROM NODE  11000.00 TO NODE  11008.00 =  2658.84 FEET.

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  FLOW PROCESS FROM NODE LR011008.0 TO NODE LR011009.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
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  UPSTREAM ELEVATION(FEET) = 1350.00  DOWNSTREAM ELEVATION(FEET) = 1345.00
  STREET LENGTH(FEET) =   249.10   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     101.94
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.72
    HALFSTREET FLOOD WIDTH(FEET) =   28.88
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.85
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.20
  STREET FLOW TRAVEL TIME(MIN.) =   0.71   Tc(MIN.) =  18.03
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.572
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A        1.94      0.98      0.25    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.37      0.98      0.60    32
  SCHOOL                     A        3.32      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.48
  SUBAREA AREA(ACRES) =    5.63      SUBAREA RUNOFF(CFS) =   10.66
  EFFECTIVE AREA(ACRES) =     57.40    AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.57
  TOTAL AREA(ACRES) =     57.40        PEAK FLOW RATE(CFS) =     104.35

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.72   HALFSTREET FLOOD WIDTH(FEET) =  29.12
  FLOW VELOCITY(FEET/SEC.) =  5.90   DEPTH*VELOCITY(FT*FT/SEC.) =   4.26
  LONGEST FLOWPATH FROM NODE  11000.00 TO NODE  11009.00 =  2907.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011009.0 TO NODE LR011010.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) = 1345.00  DOWNSTREAM ELEVATION(FEET) = 1336.00
  STREET LENGTH(FEET) =   660.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
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  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     122.42
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.81
    HALFSTREET FLOOD WIDTH(FEET) =   33.46
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.30
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.28
  STREET FLOW TRAVEL TIME(MIN.) =   2.08   Tc(MIN.) =  20.11
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.409
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       12.60      0.98      0.60    32
  MOBILE HOME PARK           A        7.72      0.98      0.25    32
  SCHOOL                     A        0.25      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.47
  SUBAREA AREA(ACRES) =   20.57      SUBAREA RUNOFF(CFS) =   36.14
  EFFECTIVE AREA(ACRES) =     77.97    AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.54
  TOTAL AREA(ACRES) =     77.97        PEAK FLOW RATE(CFS) =     132.06

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.83   HALFSTREET FLOOD WIDTH(FEET) =  34.49
  FLOW VELOCITY(FEET/SEC.) =  5.38   DEPTH*VELOCITY(FT*FT/SEC.) =   4.47
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  660.5 FT WITH ELEVATION-DROP =   9.0 FT, IS   56.8 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  11010.00
  LONGEST FLOWPATH FROM NODE  11000.00 TO NODE  11010.00 =  3568.44 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011010.0 TO NODE LR011011.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) = 1336.00  DOWNSTREAM ELEVATION(FEET) = 1323.00
  STREET LENGTH(FEET) =  1187.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
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Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     158.31
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.91
  HALFSTREET FLOOD WIDTH(FEET) =   38.64
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.17
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.72
STREET FLOW TRAVEL TIME(MIN.) =   3.82   Tc(MIN.) =  23.93
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.170
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       A       36.02      0.98      0.60    32
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        0.69      0.75      0.60    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
SUBAREA AREA(ACRES) =   36.71      SUBAREA RUNOFF(CFS) =   52.45
EFFECTIVE AREA(ACRES) =    114.68    AREA-AVERAGED Fm(INCH/HR) =  0.54
AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.56
TOTAL AREA(ACRES) =    114.68        PEAK FLOW RATE(CFS) =     167.74

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.93   HALFSTREET FLOOD WIDTH(FEET) =  39.56
FLOW VELOCITY(FEET/SEC.) =  5.24   DEPTH*VELOCITY(FT*FT/SEC.) =   4.88

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =   6.94
PIPE-FLOW(CFS) =     21.82
PIPEFLOW TRAVEL TIME(MIN.) =   2.85    Tc(MIN.) =  22.96
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.225
SUBAREA AREA(ACRES) =   36.71      SUBAREA RUNOFF(CFS) =   54.26
TOTAL AREA(ACRES) =    114.68        PEAK FLOW RATE(CFS) =    173.39

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  151.57
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.90
  HALFSTREET FLOOD WIDTH(FEET) =   37.97
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.13
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.61
LONGEST FLOWPATH FROM NODE  11000.00 TO NODE  11011.00 =  4755.44 FEET.
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****************************************************************************
  FLOW PROCESS FROM NODE LR011011.0 TO NODE LR011012.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1323.00  DOWNSTREAM ELEVATION(FEET) = 1305.00
  STREET LENGTH(FEET) =   860.03   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.89

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     191.86
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.87
    HALFSTREET FLOOD WIDTH(FEET) =   36.69
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.94
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.06
  STREET FLOW TRAVEL TIME(MIN.) =   2.07   Tc(MIN.) =  25.02
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.113
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       14.11      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       11.70      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.87
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   25.81      SUBAREA RUNOFF(CFS) =   36.92
  EFFECTIVE AREA(ACRES) =    140.49    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.95  AREA-AVERAGED Ap =  0.57
  TOTAL AREA(ACRES) =    140.49        PEAK FLOW RATE(CFS) =     198.74

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.88   HALFSTREET FLOOD WIDTH(FEET) =  37.24
  FLOW VELOCITY(FEET/SEC.) =  6.98   DEPTH*VELOCITY(FT*FT/SEC.) =   6.18
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.60
  PIPE-FLOW(CFS) =     30.17
  PIPEFLOW TRAVEL TIME(MIN.) =   1.49    Tc(MIN.) =  24.45
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.142
  SUBAREA AREA(ACRES) =   25.81      SUBAREA RUNOFF(CFS) =   37.60
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  TOTAL AREA(ACRES) =    140.49        PEAK FLOW RATE(CFS) =    202.47

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  172.30
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.84
    HALFSTREET FLOOD WIDTH(FEET) =   35.17
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.77
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.71
  LONGEST FLOWPATH FROM NODE  11000.00 TO NODE  11012.00 =  5615.47 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011012.0 TO NODE LR011013.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1305.00  DOWNSTREAM ELEVATION(FEET) = 1295.00
  STREET LENGTH(FEET) =  1312.53   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     228.31
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.11
    HALFSTREET FLOOD WIDTH(FEET) =   48.34
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.91
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.47
  STREET FLOW TRAVEL TIME(MIN.) =   4.46   Tc(MIN.) =  28.91
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.937
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       35.19      0.98      0.60    32
  MOBILE HOME PARK           A        5.79      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.55
  SUBAREA AREA(ACRES) =   40.98      SUBAREA RUNOFF(CFS) =   51.65
  EFFECTIVE AREA(ACRES) =    181.47    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.96  AREA-AVERAGED Ap =  0.56
  TOTAL AREA(ACRES) =    181.47        PEAK FLOW RATE(CFS) =     228.24

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
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  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.11   HALFSTREET FLOOD WIDTH(FEET) =  48.34
  FLOW VELOCITY(FEET/SEC.) =  4.91   DEPTH*VELOCITY(FT*FT/SEC.) =   5.46

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 1.07
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.16
  PIPE-FLOW(CFS) =     42.56
  PIPEFLOW TRAVEL TIME(MIN.) =   3.06    Tc(MIN.) =  27.51
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.996
  SUBAREA AREA(ACRES) =   40.98      SUBAREA RUNOFF(CFS) =   53.82
  TOTAL AREA(ACRES) =    181.47        PEAK FLOW RATE(CFS) =    237.81

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  195.26
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.06
    HALFSTREET FLOOD WIDTH(FEET) =   45.59
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.72
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.00
  LONGEST FLOWPATH FROM NODE  11000.00 TO NODE  11013.00 =  6928.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011013.0 TO NODE LR011014.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1295.00  DOWNSTREAM ELEVATION(FEET) = 1292.00
  STREET LENGTH(FEET) =  1328.18   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     277.88
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.46
    HALFSTREET FLOOD WIDTH(FEET) =   65.73
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.22
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.71
  STREET FLOW TRAVEL TIME(MIN.) =   6.87   Tc(MIN.) =  34.37
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 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.746
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        4.68      0.75      0.60    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A       57.49      0.98      0.60    32
 AGRICULTURAL FAIR COVER
 "ORCHARDS"                 A       18.33      0.88      1.00    44
 AGRICULTURAL FAIR COVER
 "ORCHARDS"                 B        0.15      0.63      1.00    65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.93
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
 SUBAREA AREA(ACRES) =   80.65      SUBAREA RUNOFF(CFS) =   79.98
 EFFECTIVE AREA(ACRES) =    262.12    AREA-AVERAGED Fm(INCH/HR) =  0.57
 AREA-AVERAGED Fp(INCH/HR) =  0.95  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =    262.12        PEAK FLOW RATE(CFS) =     277.00

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 1.46   HALFSTREET FLOOD WIDTH(FEET) =  65.67
 FLOW VELOCITY(FEET/SEC.) =  3.22   DEPTH*VELOCITY(FT*FT/SEC.) =   4.70

 *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
        THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 1.07
 SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
 ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
 ESTIMATED PIPE DIAMETER(INCH) =  75.00    NUMBER OF PIPES =   1
 ASSUME FULL-FLOWING PIPELINE
 PIPE-FLOW VELOCITY(FEET/SEC.) =   6.74
 PIPE-FLOW(CFS) =    206.96
 PIPEFLOW TRAVEL TIME(MIN.) =   3.28    Tc(MIN.) =  30.79
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.865
 SUBAREA AREA(ACRES) =   80.65      SUBAREA RUNOFF(CFS) =   88.63
 TOTAL AREA(ACRES) =    262.12        PEAK FLOW RATE(CFS) =    305.12

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   98.15
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  1.03
   HALFSTREET FLOOD WIDTH(FEET) =   44.25
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.52
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.60
 LONGEST FLOWPATH FROM NODE  11000.00 TO NODE  11014.00 =  8256.18 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR011014.0 TO NODE LR011015.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1292.00  DOWNSTREAM ELEVATION(FEET) = 1260.00
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 STREET LENGTH(FEET) =  2883.01   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     366.89
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  1.22
   HALFSTREET FLOOD WIDTH(FEET) =   53.89
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.34
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.76
 STREET FLOW TRAVEL TIME(MIN.) =   7.58   Tc(MIN.) =  38.37
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.635
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       68.14      0.75      0.60    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A       51.31      0.98      0.60    32
 NATURAL FAIR COVER
 "OPEN BRUSH"               A        3.04      0.86      1.00    46
 PUBLIC PARK                A        0.17      0.98      0.85    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.85
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.61
 SUBAREA AREA(ACRES) =  122.66      SUBAREA RUNOFF(CFS) =  123.43
 EFFECTIVE AREA(ACRES) =    384.78    AREA-AVERAGED Fm(INCH/HR) =  0.55
 AREA-AVERAGED Fp(INCH/HR) =  0.92  AREA-AVERAGED Ap =  0.61
 TOTAL AREA(ACRES) =    384.78        PEAK FLOW RATE(CFS) =     374.13

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 1.23   HALFSTREET FLOOD WIDTH(FEET) =  54.32
 FLOW VELOCITY(FEET/SEC.) =  6.36   DEPTH*VELOCITY(FT*FT/SEC.) =   7.85

 *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
        THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 1.07
 SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
 ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
 ESTIMATED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
 ASSUME FULL-FLOWING PIPELINE
 PIPE-FLOW VELOCITY(FEET/SEC.) =  12.44
 PIPE-FLOW(CFS) =    220.67
 PIPEFLOW TRAVEL TIME(MIN.) =   3.86    Tc(MIN.) =  34.65
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.738
 SUBAREA AREA(ACRES) =  122.66      SUBAREA RUNOFF(CFS) =  134.81
 TOTAL AREA(ACRES) =    384.78        PEAK FLOW RATE(CFS) =    409.81
```

```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  189.14
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.99
    HALFSTREET FLOOD WIDTH(FEET) =   42.05
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.38
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.32
  LONGEST FLOWPATH FROM NODE  11000.00 TO NODE  11015.00 = 11139.19 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =    384.78  TC(MIN.) =     34.65
  EFFECTIVE AREA(ACRES) =    384.78  AREA-AVERAGED Fm(INCH/HR)=  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.92  AREA-AVERAGED Ap =  0.61
  PEAK FLOW RATE(CFS)   =    409.81
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

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**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                            County of San Bernardino
                          Transportation Flood Control

                          Water Resources Division

--------------------------------------------------------------------------
  FILE NAME: LR0111ZZ.Z13
  TIME/DATE OF STUDY: 10:43 09/13/2004
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.2500

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)     (n)
===  =====  ========  =================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
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    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


**************************************************************************
  FLOW PROCESS FROM NODE LR011100.0 TO NODE LR011101.0 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   876.30
  ELEVATION DATA: UPSTREAM(FEET) =   1350.00  DOWNSTREAM(FEET) =   1341.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.419
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.382
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        3.15      0.98       0.60    32   15.48
  COMMERCIAL                 A        4.24      0.98       0.10    32   11.42
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        0.96      0.98       0.50    32   14.61
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.33
  SUBAREA RUNOFF(CFS) =     22.97
  TOTAL AREA(ACRES) =      8.35   PEAK FLOW RATE(CFS) =     22.97

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

**************************************************************************
  FLOW PROCESS FROM NODE LR011101.0 TO NODE LR011102.0 IS CODE =  63
--------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
==========================================================================
  UPSTREAM ELEVATION(FEET) = 1341.00  DOWNSTREAM ELEVATION(FEET) = 1332.00
  STREET LENGTH(FEET) =   700.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
```

```
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.04

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      33.72
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.59
    HALFSTREET FLOOD WIDTH(FEET) =   21.81
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.41
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.03
  STREET FLOW TRAVEL TIME(MIN.) =   3.43   Tc(MIN.) =  14.84
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.890
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        2.90      0.98      0.60    32
  COMMERCIAL                 A        5.05      0.98      0.10    32
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        1.27      0.98      0.50    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.31
  SUBAREA AREA(ACRES) =    9.22      SUBAREA RUNOFF(CFS) =   21.45
  EFFECTIVE AREA(ACRES) =     17.57    AREA-AVERAGED Fm(INCH/HR) =  0.31
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.32
  TOTAL AREA(ACRES) =     17.57        PEAK FLOW RATE(CFS) =      40.72

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.63   HALFSTREET FLOOD WIDTH(FEET) =  23.45
  FLOW VELOCITY(FEET/SEC.) =  3.58   DEPTH*VELOCITY(FT*FT/SEC.) =   2.24
  LONGEST FLOWPATH FROM NODE  11100.00 TO NODE  11102.00 =  1576.80 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011102.0 TO NODE LR011103.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1332.00  DOWNSTREAM ELEVATION(FEET) = 1310.00
  STREET LENGTH(FEET) =  1301.53   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.97
```



```
    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      57.77
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.67
    HALFSTREET FLOOD WIDTH(FEET) =   25.58
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.32
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.88
  STREET FLOW TRAVEL TIME(MIN.) =   5.03   Tc(MIN.) =  19.87
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.426
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        5.95      0.98      0.60    32
  COMMERCIAL                 A        9.58      0.98      0.10    32
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        2.34      0.98      0.50    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.32
  SUBAREA AREA(ACRES) =   17.87      SUBAREA RUNOFF(CFS) =   34.02
  EFFECTIVE AREA(ACRES) =     35.44    AREA-AVERAGED Fm(INCH/HR) =  0.31
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.32
  TOTAL AREA(ACRES) =     35.44        PEAK FLOW RATE(CFS) =      67.40

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.69   HALFSTREET FLOOD WIDTH(FEET) =  27.40
  FLOW VELOCITY(FEET/SEC.) =  4.56   DEPTH*VELOCITY(FT*FT/SEC.) =   3.16
  LONGEST FLOWPATH FROM NODE  11100.00 TO NODE  11103.00 =  2878.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011103.0 TO NODE LR011104.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1310.00  DOWNSTREAM ELEVATION(FEET) = 1302.00
  STREET LENGTH(FEET) =   333.78   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.88

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      74.09
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.68
    HALFSTREET FLOOD WIDTH(FEET) =   26.79
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.24
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.58
```

```
  STREET FLOW TRAVEL TIME(MIN.) =   1.06   Tc(MIN.) =  20.93
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.351
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        5.14      0.98      0.60    32
  COMMERCIAL                 A        2.30      0.98      0.10    32
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        0.33      0.98      0.50    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.45
  SUBAREA AREA(ACRES) =    7.77      SUBAREA RUNOFF(CFS) =   13.39
  EFFECTIVE AREA(ACRES) =     43.21    AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.34
  TOTAL AREA(ACRES) =     43.21        PEAK FLOW RATE(CFS) =      78.41

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.69   HALFSTREET FLOOD WIDTH(FEET) =  27.22
  FLOW VELOCITY(FEET/SEC.) =  5.37   DEPTH*VELOCITY(FT*FT/SEC.) =   3.71
  LONGEST FLOWPATH FROM NODE  11100.00 TO NODE  11104.00 =  3212.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011104.0 TO NODE LR011105.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1302.00  DOWNSTREAM ELEVATION(FEET) = 1300.00
  STREET LENGTH(FEET) =   177.15   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      82.11
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.77
    HALFSTREET FLOOD WIDTH(FEET) =   31.19
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.27
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.29
  STREET FLOW TRAVEL TIME(MIN.) =   0.69   Tc(MIN.) =  21.62
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.306
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
```



```
  "3-4 DWELLINGS/ACRE"       A        2.52      0.98      0.60    32
  COMMERCIAL                 A        1.59      0.98      0.10    32
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        0.20      0.98      0.50    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.41
  SUBAREA AREA(ACRES) =    4.31      SUBAREA RUNOFF(CFS) =    7.39
  EFFECTIVE AREA(ACRES) =     47.52    AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.35
  TOTAL AREA(ACRES) =     47.52        PEAK FLOW RATE(CFS) =      84.04

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.78   HALFSTREET FLOOD WIDTH(FEET) =  31.43
  FLOW VELOCITY(FEET/SEC.) =  4.30   DEPTH*VELOCITY(FT*FT/SEC.) =   3.34
  LONGEST FLOWPATH FROM NODE  11100.00 TO NODE  11105.00 =  3389.26 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011105.0 TO NODE LR011106.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1300.00  DOWNSTREAM ELEVATION(FEET) = 1298.00
  STREET LENGTH(FEET) =   169.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      87.39
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.78
    HALFSTREET FLOOD WIDTH(FEET) =   31.61
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.42
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.44
  STREET FLOW TRAVEL TIME(MIN.) =   0.64   Tc(MIN.) =  22.26
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.266
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        2.39      0.98      0.60    32
  COMMERCIAL                 A        1.44      0.98      0.10    32
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        0.18      0.98      0.50    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.42
```

```
  SUBAREA AREA(ACRES) =    4.01      SUBAREA RUNOFF(CFS) =    6.71
  EFFECTIVE AREA(ACRES) =     51.53    AREA-AVERAGED Fm(INCH/HR) =  0.35
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.35
  TOTAL AREA(ACRES) =     51.53        PEAK FLOW RATE(CFS) =      89.05

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.78   HALFSTREET FLOOD WIDTH(FEET) =  31.80
  FLOW VELOCITY(FEET/SEC.) =  4.45   DEPTH*VELOCITY(FT*FT/SEC.) =   3.48
  LONGEST FLOWPATH FROM NODE  11100.00 TO NODE  11106.00 =  3558.26 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011106.0 TO NODE LR011107.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1298.00  DOWNSTREAM ELEVATION(FEET) = 1296.00
  STREET LENGTH(FEET) =   338.82   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      95.56
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.88
    HALFSTREET FLOOD WIDTH(FEET) =   36.80
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.56
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.14
  STREET FLOW TRAVEL TIME(MIN.) =   1.59   Tc(MIN.) =  23.85
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.174
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 A        2.92      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        4.86      0.98      0.60    32
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        0.40      0.98      0.50    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.42
  SUBAREA AREA(ACRES) =    8.18      SUBAREA RUNOFF(CFS) =   13.02
  EFFECTIVE AREA(ACRES) =     59.71    AREA-AVERAGED Fm(INCH/HR) =  0.35
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.36
  TOTAL AREA(ACRES) =     59.71        PEAK FLOW RATE(CFS) =      97.81

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
```



```
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.89   HALFSTREET FLOOD WIDTH(FEET) =  37.11
  FLOW VELOCITY(FEET/SEC.) =  3.58   DEPTH*VELOCITY(FT*FT/SEC.) =   3.18
  LONGEST FLOWPATH FROM NODE  11100.00 TO NODE  11107.00 =  3897.08 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011107.0 TO NODE LR011108.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1296.00  DOWNSTREAM ELEVATION(FEET) = 1293.00
  STREET LENGTH(FEET) =   344.59   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     103.12
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.85
    HALFSTREET FLOOD WIDTH(FEET) =   35.28
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.18
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.56
  STREET FLOW TRAVEL TIME(MIN.) =   1.37   Tc(MIN.) =  25.22
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.103
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.77      0.98      0.60    32
  COMMERCIAL                 A        5.22      0.98      0.10    32
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        0.11      0.98      0.50    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.17
  SUBAREA AREA(ACRES) =    6.10      SUBAREA RUNOFF(CFS) =   10.63
  EFFECTIVE AREA(ACRES) =     65.81    AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.35
  TOTAL AREA(ACRES) =     65.81        PEAK FLOW RATE(CFS) =     104.58

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.86   HALFSTREET FLOOD WIDTH(FEET) =  35.46
  FLOW VELOCITY(FEET/SEC.) =  4.20   DEPTH*VELOCITY(FT*FT/SEC.) =   3.59
  LONGEST FLOWPATH FROM NODE  11100.00 TO NODE  11108.00 =  4241.67 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR011108.0 TO NODE LR011109.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1293.00  DOWNSTREAM(FEET) =   1290.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   550.33   CHANNEL SLOPE =  0.0055
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    104.58
  FLOW VELOCITY(FEET/SEC.) =   3.86   FLOW DEPTH(FEET) =   1.75
  TRAVEL TIME(MIN.) =   2.38   Tc(MIN.) =  27.60
  LONGEST FLOWPATH FROM NODE  11100.00 TO NODE  11109.00 =  4792.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011109.0 TO NODE LR011109.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  27.60
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.992
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 A        2.61      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.52      0.98      0.60    32
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        1.44      0.98      0.50    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.28
  SUBAREA AREA(ACRES) =    4.57      SUBAREA RUNOFF(CFS) =    7.06
  EFFECTIVE AREA(ACRES) =     70.38   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.34
  TOTAL AREA(ACRES) =     70.38       PEAK FLOW RATE(CFS) =     105.08

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR011109.0 TO NODE LR011110.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1290.00  DOWNSTREAM(FEET) =   1285.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   488.52   CHANNEL SLOPE =  0.0102
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    105.08
  FLOW VELOCITY(FEET/SEC.) =   4.79   FLOW DEPTH(FEET) =   1.47
  TRAVEL TIME(MIN.) =   1.70   Tc(MIN.) =  29.30
  LONGEST FLOWPATH FROM NODE  11100.00 TO NODE  11110.00 =  5280.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011110.0 TO NODE LR011110.0 IS CODE =  81
```



```
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  29.30
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.922
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 A        3.24      0.98      0.10    32
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        2.34      0.98      0.50    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.27
  SUBAREA AREA(ACRES) =    5.58      SUBAREA RUNOFF(CFS) =    8.34
  EFFECTIVE AREA(ACRES) =     75.96   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.34
  TOTAL AREA(ACRES) =     75.96       PEAK FLOW RATE(CFS) =     108.98

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR011110.0 TO NODE LR011111.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1285.00  DOWNSTREAM(FEET) =   1280.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   580.02   CHANNEL SLOPE =  0.0086
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   9.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    108.98
  FLOW VELOCITY(FEET/SEC.) =   8.78   FLOW DEPTH(FEET) =   1.19
  TRAVEL TIME(MIN.) =   1.10   Tc(MIN.) =  30.40
  LONGEST FLOWPATH FROM NODE  11100.00 TO NODE  11111.00 =  5860.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011111.0 TO NODE LR011111.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  30.40
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.880
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        5.79      0.98      0.50    32
  COMMERCIAL                 A       12.04      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       12.62      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.38
  SUBAREA AREA(ACRES) =   30.45      SUBAREA RUNOFF(CFS) =   41.27
  EFFECTIVE AREA(ACRES) =    106.41   AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.35
  TOTAL AREA(ACRES) =    106.41       PEAK FLOW RATE(CFS) =     147.37
```

```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR011111.0 TO NODE LR011153.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1280.00  DOWNSTREAM(FEET) =   1258.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1287.20   CHANNEL SLOPE =  0.0171
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   9.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    147.37
  FLOW VELOCITY(FEET/SEC.) =  12.18   FLOW DEPTH(FEET) =   1.17
  TRAVEL TIME(MIN.) =   1.76   Tc(MIN.) =  32.16
  LONGEST FLOWPATH FROM NODE  11100.00 TO NODE  11153.00 =  7147.74 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011153.0 TO NODE LR011153.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  32.16
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.817
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.01      0.75      0.50    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        5.86      0.98      0.50    32
  COMMERCIAL                 A       12.53      0.98      0.10    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.23
  SUBAREA AREA(ACRES) =   18.40      SUBAREA RUNOFF(CFS) =   26.42
  EFFECTIVE AREA(ACRES) =    124.81   AREA-AVERAGED Fm(INCH/HR) =  0.32
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.33
  TOTAL AREA(ACRES) =    124.81       PEAK FLOW RATE(CFS) =     167.81

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR011153.0 TO NODE LR011153.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR011120.0 TO NODE LR011121.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   880.26
  ELEVATION DATA: UPSTREAM(FEET) =   1395.00  DOWNSTREAM(FEET) =   1390.00
```



```
  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.234
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.964
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  MOBILE HOME PARK           A        7.01      0.98      0.25    32   14.23
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        2.73      0.98      0.60    32   17.45
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.35
  SUBAREA RUNOFF(CFS) =     23.00
  TOTAL AREA(ACRES) =      9.74   PEAK FLOW RATE(CFS) =     23.00

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.59

****************************************************************************
  FLOW PROCESS FROM NODE LR011121.0 TO NODE LR011122.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1390.00  DOWNSTREAM ELEVATION(FEET) = 1388.00
  STREET LENGTH(FEET) =   185.87   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      30.65
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.55
    HALFSTREET FLOOD WIDTH(FEET) =   20.64
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.31
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.83
  STREET FLOW TRAVEL TIME(MIN.) =   0.93   Tc(MIN.) =  15.17
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.853
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A        5.06      0.98      0.25    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.67      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.34
  SUBAREA AREA(ACRES) =    6.73      SUBAREA RUNOFF(CFS) =   15.29
  EFFECTIVE AREA(ACRES) =     16.47    AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.34
  TOTAL AREA(ACRES) =     16.47        PEAK FLOW RATE(CFS) =      37.32
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  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.59

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.58   HALFSTREET FLOOD WIDTH(FEET) =  22.16
  FLOW VELOCITY(FEET/SEC.) =  3.54   DEPTH*VELOCITY(FT*FT/SEC.) =   2.06
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  185.9 FT WITH ELEVATION-DROP =   2.0 FT, IS   26.2 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  11122.00
  LONGEST FLOWPATH FROM NODE  11120.00 TO NODE  11122.00 =  1066.13 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011122.0 TO NODE LR011123.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1388.00  DOWNSTREAM ELEVATION(FEET) = 1385.00
  STREET LENGTH(FEET) =   198.64   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      45.16
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.59
    HALFSTREET FLOOD WIDTH(FEET) =   22.35
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.21
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.47
  STREET FLOW TRAVEL TIME(MIN.) =   0.79   Tc(MIN.) =  15.95
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.767
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.33      0.98      0.60    32
  MOBILE HOME PARK           A        5.75      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.32
  SUBAREA AREA(ACRES) =    7.08      SUBAREA RUNOFF(CFS) =   15.67
  EFFECTIVE AREA(ACRES) =     23.55    AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.34
  TOTAL AREA(ACRES) =     23.55        PEAK FLOW RATE(CFS) =      51.73

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
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  DEPTH(FEET) = 0.61   HALFSTREET FLOOD WIDTH(FEET) =  23.51
  FLOW VELOCITY(FEET/SEC.) =  4.39   DEPTH*VELOCITY(FT*FT/SEC.) =   2.68
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  198.6 FT WITH ELEVATION-DROP =   3.0 FT, IS   28.4 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  11123.00
  LONGEST FLOWPATH FROM NODE  11120.00 TO NODE  11123.00 =  1264.77 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011123.0 TO NODE LR011124.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1385.00  DOWNSTREAM ELEVATION(FEET) = 1380.00
  STREET LENGTH(FEET) =   331.32   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      63.64
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.65
    HALFSTREET FLOOD WIDTH(FEET) =   25.40
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.67
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.02
  STREET FLOW TRAVEL TIME(MIN.) =   1.18   Tc(MIN.) =  17.14
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.651
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A        8.87      0.98      0.25    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        2.48      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.33
  SUBAREA AREA(ACRES) =   11.35      SUBAREA RUNOFF(CFS) =   23.83
  EFFECTIVE AREA(ACRES) =     34.90    AREA-AVERAGED Fm(INCH/HR) =  0.32
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.33
  TOTAL AREA(ACRES) =     34.90        PEAK FLOW RATE(CFS) =      73.09

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.68   HALFSTREET FLOOD WIDTH(FEET) =  26.80
  FLOW VELOCITY(FEET/SEC.) =  4.84   DEPTH*VELOCITY(FT*FT/SEC.) =   3.27
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  331.3 FT WITH ELEVATION-DROP =   5.0 FT, IS   39.8 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  11124.00
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  LONGEST FLOWPATH FROM NODE  11120.00 TO NODE  11124.00 =  1596.09 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011124.0 TO NODE LR011125.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1380.00  DOWNSTREAM ELEVATION(FEET) = 1370.00
  STREET LENGTH(FEET) =   346.03   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.81

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      84.71
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.64
    HALFSTREET FLOOD WIDTH(FEET) =   25.03
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.39
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.09
  STREET FLOW TRAVEL TIME(MIN.) =   0.90   Tc(MIN.) =  18.04
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.571
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        4.16      0.98      0.60    32
  MOBILE HOME PARK           A        7.54      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.37
  SUBAREA AREA(ACRES) =   11.70      SUBAREA RUNOFF(CFS) =   23.23
  EFFECTIVE AREA(ACRES) =     46.60    AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.34
  TOTAL AREA(ACRES) =     46.60        PEAK FLOW RATE(CFS) =      93.79

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.66   HALFSTREET FLOOD WIDTH(FEET) =  26.07
  FLOW VELOCITY(FEET/SEC.) =  6.55   DEPTH*VELOCITY(FT*FT/SEC.) =   4.33
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  346.0 FT WITH ELEVATION-DROP =  10.0 FT, IS   43.6 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  11125.00
  LONGEST FLOWPATH FROM NODE  11120.00 TO NODE  11125.00 =  1942.12 FEET.

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  FLOW PROCESS FROM NODE LR011125.0 TO NODE LR011126.0 IS CODE =  63
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  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1370.00  DOWNSTREAM ELEVATION(FEET) = 1359.00
  STREET LENGTH(FEET) =   622.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     111.98
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.75
    HALFSTREET FLOOD WIDTH(FEET) =   30.71
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.72
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.31
  STREET FLOW TRAVEL TIME(MIN.) =   1.82   Tc(MIN.) =  19.86
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.427
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       21.92      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   21.92      SUBAREA RUNOFF(CFS) =   36.34
  EFFECTIVE AREA(ACRES) =     68.52    AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.43
  TOTAL AREA(ACRES) =     68.52        PEAK FLOW RATE(CFS) =     124.10

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.78   HALFSTREET FLOOD WIDTH(FEET) =  31.93
  FLOW VELOCITY(FEET/SEC.) =  5.88   DEPTH*VELOCITY(FT*FT/SEC.) =   4.57
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  622.5 FT WITH ELEVATION-DROP =  11.0 FT, IS   52.9 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  11126.00
  LONGEST FLOWPATH FROM NODE  11120.00 TO NODE  11126.00 =  2564.62 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011126.0 TO NODE LR011127.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1359.00  DOWNSTREAM ELEVATION(FEET) = 1355.00
  STREET LENGTH(FEET) =   316.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00
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  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     133.05
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.84
    HALFSTREET FLOOD WIDTH(FEET) =   35.10
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.24
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.41
  STREET FLOW TRAVEL TIME(MIN.) =   1.01   Tc(MIN.) =  20.86
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.356
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       11.22      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   11.22      SUBAREA RUNOFF(CFS) =   17.88
  EFFECTIVE AREA(ACRES) =     79.74    AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.45
  TOTAL AREA(ACRES) =     79.74        PEAK FLOW RATE(CFS) =     137.62

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.85   HALFSTREET FLOOD WIDTH(FEET) =  35.53
  FLOW VELOCITY(FEET/SEC.) =  5.30   DEPTH*VELOCITY(FT*FT/SEC.) =   4.51
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  316.5 FT WITH ELEVATION-DROP =   4.0 FT, IS   31.3 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  11127.00
  LONGEST FLOWPATH FROM NODE  11120.00 TO NODE  11127.00 =  2881.12 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011127.0 TO NODE LR011128.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1355.00  DOWNSTREAM ELEVATION(FEET) = 1352.00
  STREET LENGTH(FEET) =   315.54   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
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  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     194.54
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.00
    HALFSTREET FLOOD WIDTH(FEET) =   43.16
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.12
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.14
  STREET FLOW TRAVEL TIME(MIN.) =   1.03   Tc(MIN.) =  21.89
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.289
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       28.58      0.98      0.60    32
  MOBILE HOME PARK           B       12.99      0.75      0.25    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       12.02      0.75      0.60    56
  COMMERCIAL                 A        7.04      0.98      0.10    32
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        4.98      0.75      0.50    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        1.89      0.98      0.50    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.88
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.47
  SUBAREA AREA(ACRES) =   67.50      SUBAREA RUNOFF(CFS) =  113.85
  EFFECTIVE AREA(ACRES) =    147.24    AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.93  AREA-AVERAGED Ap =  0.46
  TOTAL AREA(ACRES) =    147.24        PEAK FLOW RATE(CFS) =     246.66

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.59

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.09   HALFSTREET FLOOD WIDTH(FEET) =  47.43
  FLOW VELOCITY(FEET/SEC.) =  5.39   DEPTH*VELOCITY(FT*FT/SEC.) =   5.87

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.70
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  51.0 INCH PIPE IS  38.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.12
  PIPE-FLOW(CFS) =    137.62
  PIPEFLOW TRAVEL TIME(MIN.) =   0.43    Tc(MIN.) =  21.30
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.327
  SUBAREA AREA(ACRES) =   67.50      SUBAREA RUNOFF(CFS) =  116.16
  TOTAL AREA(ACRES) =    147.24        PEAK FLOW RATE(CFS) =    251.70

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.59
  *NOTE: STREET-CAPACITY MAY BE EXCEEDED*
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
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  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  114.09
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.84
    HALFSTREET FLOOD WIDTH(FEET) =   34.92
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.54
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.81
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =   315.5 FT WITH ELEVATION-DROP =   3.0 FT, IS  234.9 CFS,
         WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  11128.00
  LONGEST FLOWPATH FROM NODE  11120.00 TO NODE  11128.00 =  3196.66 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011128.0 TO NODE LR011129.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1352.00  DOWNSTREAM ELEVATION(FEET) = 1345.00
  STREET LENGTH(FEET) =   664.38   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     260.81
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.09
    HALFSTREET FLOOD WIDTH(FEET) =   47.49
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.69
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.20
  STREET FLOW TRAVEL TIME(MIN.) =   1.95   Tc(MIN.) =  23.24
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.208
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 A        1.26      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       10.83      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.55
  SUBAREA AREA(ACRES) =   12.09      SUBAREA RUNOFF(CFS) =   18.21
  EFFECTIVE AREA(ACRES) =    159.33    AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.94  AREA-AVERAGED Ap =  0.47
  TOTAL AREA(ACRES) =    159.33        PEAK FLOW RATE(CFS) =     254.15

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
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  DEPTH(FEET) = 1.08   HALFSTREET FLOOD WIDTH(FEET) =  47.01
  FLOW VELOCITY(FEET/SEC.) =  5.66   DEPTH*VELOCITY(FT*FT/SEC.) =   6.11

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.26
  PIPE-FLOW(CFS) =    159.81
  PIPEFLOW TRAVEL TIME(MIN.) =   0.98    Tc(MIN.) =  22.28
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.265
  SUBAREA AREA(ACRES) =   12.09      SUBAREA RUNOFF(CFS) =   18.83
  TOTAL AREA(ACRES) =    159.33        PEAK FLOW RATE(CFS) =    262.29

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  102.48
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.80
    HALFSTREET FLOOD WIDTH(FEET) =   32.79
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.61
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.67
  LONGEST FLOWPATH FROM NODE  11120.00 TO NODE  11129.00 =  3861.04 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011129.0 TO NODE LR011130.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1345.00  DOWNSTREAM ELEVATION(FEET) = 1335.00
  STREET LENGTH(FEET) =   675.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.00

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     269.89
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.06
    HALFSTREET FLOOD WIDTH(FEET) =   45.47
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.56
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.93
  STREET FLOW TRAVEL TIME(MIN.) =   1.72   Tc(MIN.) =  24.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.166
  SUBAREA LOSS RATE DATA(AMC  II):
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 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
SCHOOL                      A        1.18      0.98       0.60    32
RESIDENTIAL
"3-4 DWELLINGS/ACRE"        A        5.90      0.98       0.60    32
COMMERCIAL                  A        2.75      0.98       0.10    32
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.46
SUBAREA AREA(ACRES) =    9.83      SUBAREA RUNOFF(CFS) =   15.20
EFFECTIVE AREA(ACRES) =    169.16    AREA-AVERAGED Fm(INCH/HR) =  0.44
AREA-AVERAGED Fp(INCH/HR) =  0.94  AREA-AVERAGED Ap =  0.47
TOTAL AREA(ACRES) =    169.16        PEAK FLOW RATE(CFS) =     263.35

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.05   HALFSTREET FLOOD WIDTH(FEET) =  45.04
FLOW VELOCITY(FEET/SEC.) =  6.53   DEPTH*VELOCITY(FT*FT/SEC.) =   6.84

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 1.00
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  12.81
PIPE-FLOW(CFS) =    161.15
PIPEFLOW TRAVEL TIME(MIN.) =   0.88    Tc(MIN.) =  23.16
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.213
SUBAREA AREA(ACRES) =    9.83      SUBAREA RUNOFF(CFS) =   15.61
TOTAL AREA(ACRES) =    169.16        PEAK FLOW RATE(CFS) =    270.45

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  109.30
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.80
  HALFSTREET FLOOD WIDTH(FEET) =   32.84
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.12
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.11
LONGEST FLOWPATH FROM NODE  11120.00 TO NODE  11130.00 =  4536.54 FEET.

****************************************************************************
FLOW PROCESS FROM NODE LR011130.0 TO NODE LR011131.0 IS CODE =  63
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 1335.00  DOWNSTREAM ELEVATION(FEET) = 1320.00
STREET LENGTH(FEET) =  1010.00   CURB HEIGHT(INCHES) =  8.0
STREET HALFWIDTH(FEET) = 26.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
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SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.00

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     280.36
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  1.07
  HALFSTREET FLOOD WIDTH(FEET) =   46.08
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.64
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.09
STREET FLOW TRAVEL TIME(MIN.) =   2.54   Tc(MIN.) =  25.69
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.079
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"        A       14.65      0.98       0.60    32
SCHOOL                      A        0.09      0.98       0.60    32
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
SUBAREA AREA(ACRES) =   14.74      SUBAREA RUNOFF(CFS) =   19.82
EFFECTIVE AREA(ACRES) =    183.90    AREA-AVERAGED Fm(INCH/HR) =  0.45
AREA-AVERAGED Fp(INCH/HR) =  0.94  AREA-AVERAGED Ap =  0.48
TOTAL AREA(ACRES) =    183.90        PEAK FLOW RATE(CFS) =     270.45
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.06   HALFSTREET FLOOD WIDTH(FEET) =  45.47
FLOW VELOCITY(FEET/SEC.) =  6.58   DEPTH*VELOCITY(FT*FT/SEC.) =   6.94

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 1.00
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  12.83
PIPE-FLOW(CFS) =    161.41
PIPEFLOW TRAVEL TIME(MIN.) =   1.31    Tc(MIN.) =  24.47
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.141
SUBAREA AREA(ACRES) =   14.74      SUBAREA RUNOFF(CFS) =   20.64
TOTAL AREA(ACRES) =    183.90        PEAK FLOW RATE(CFS) =    280.13

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  118.73
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.82
  HALFSTREET FLOOD WIDTH(FEET) =   33.75
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    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.26
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.32
  LONGEST FLOWPATH FROM NODE  11120.00 TO NODE  11131.00 =  5546.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011131.0 TO NODE LR011132.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1320.00  DOWNSTREAM ELEVATION(FEET) = 1311.00
  STREET LENGTH(FEET) =  1001.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     354.33
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.25
    HALFSTREET FLOOD WIDTH(FEET) =   55.36
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.80
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.28
  STREET FLOW TRAVEL TIME(MIN.) =   2.88   Tc(MIN.) =  27.35
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.003
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A      109.46      0.98      0.60    32
  COMMERCIAL                 A        5.02      0.98      0.10    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.58
  SUBAREA AREA(ACRES) =  114.48      SUBAREA RUNOFF(CFS) =  148.30
  EFFECTIVE AREA(ACRES) =    298.38    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.96  AREA-AVERAGED Ap =  0.52
  TOTAL AREA(ACRES) =    298.38        PEAK FLOW RATE(CFS) =     405.58

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.31   HALFSTREET FLOOD WIDTH(FEET) =  58.29
  FLOW VELOCITY(FEET/SEC.) =  5.99   DEPTH*VELOCITY(FT*FT/SEC.) =   7.86

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 1.07
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
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  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.59
  PIPE-FLOW(CFS) =    227.72
  PIPEFLOW TRAVEL TIME(MIN.) =   1.44    Tc(MIN.) =  25.91
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.069
  SUBAREA AREA(ACRES) =  114.48      SUBAREA RUNOFF(CFS) =  155.08
  TOTAL AREA(ACRES) =    298.38        PEAK FLOW RATE(CFS) =    423.27

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  195.55
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.03
    HALFSTREET FLOOD WIDTH(FEET) =   44.25
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.02
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.18
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  1001.0 FT WITH ELEVATION-DROP =   9.0 FT, IS  274.1 CFS,
         WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  11132.00
  LONGEST FLOWPATH FROM NODE  11120.00 TO NODE  11132.00 =  6547.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011132.0 TO NODE LR011152.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1311.00  DOWNSTREAM ELEVATION(FEET) = 1300.00
  STREET LENGTH(FEET) =   662.69   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.97

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     423.27
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.20
    HALFSTREET FLOOD WIDTH(FEET) =   52.73
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.64
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    9.18
  STREET FLOW TRAVEL TIME(MIN.) =   1.45   Tc(MIN.) =  27.36
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.003
  SUBAREA AREA(ACRES) =    0.00      SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =    298.38    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.96  AREA-AVERAGED Ap =  0.52
  TOTAL AREA(ACRES) =    298.38        PEAK FLOW RATE(CFS) =     423.27
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
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  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.58

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.20   HALFSTREET FLOOD WIDTH(FEET) =  52.73
  FLOW VELOCITY(FEET/SEC.) =  7.64   DEPTH*VELOCITY(FT*FT/SEC.) =   9.18

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.97
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.68
  PIPE-FLOW(CFS) =    233.62
  PIPEFLOW TRAVEL TIME(MIN.) =   0.75    Tc(MIN.) =  26.66
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.034
  SUBAREA AREA(ACRES) =    0.00      SUBAREA RUNOFF(CFS) =    0.00
  TOTAL AREA(ACRES) =    298.38        PEAK FLOW RATE(CFS) =    423.27
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.58
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  189.65
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.93
    HALFSTREET FLOOD WIDTH(FEET) =   39.06
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.26
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.81
  LONGEST FLOWPATH FROM NODE  11120.00 TO NODE  11152.00 =  7210.23 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011152.0 TO NODE LR011152.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  26.66
  RAINFALL INTENSITY(INCH/HR) =   2.03
  AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.96
  AREA-AVERAGED Ap =  0.52
  EFFECTIVE STREAM AREA(ACRES) =   298.38
  TOTAL STREAM AREA(ACRES) =   298.38
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    423.27

****************************************************************************
  FLOW PROCESS FROM NODE LR011140.0 TO NODE LR011141.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   767.28
  ELEVATION DATA: UPSTREAM(FEET) =   1398.00  DOWNSTREAM(FEET) =   1388.00
```



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  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.411
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.384
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  MOBILE HOME PARK          A        6.95      0.98       0.25    32   11.41
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"      A        2.20      0.98       0.60    32   13.99
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.33
  SUBAREA RUNOFF(CFS) =     25.18
  TOTAL AREA(ACRES) =      9.15   PEAK FLOW RATE(CFS) =     25.18

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.59

****************************************************************************
  FLOW PROCESS FROM NODE LR011141.0 TO NODE LR011142.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1388.00  DOWNSTREAM ELEVATION(FEET) = 1385.00
  STREET LENGTH(FEET) =   156.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      34.93
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.57
    HALFSTREET FLOOD WIDTH(FEET) =   20.40
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.01
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.27
  STREET FLOW TRAVEL TIME(MIN.) =   0.65   Tc(MIN.) =  12.06
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.273
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK          A        6.77      0.98       0.25    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"      A        0.43      0.98       0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.27
  SUBAREA AREA(ACRES) =    7.20      SUBAREA RUNOFF(CFS) =   19.50
  EFFECTIVE AREA(ACRES) =     16.35    AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.31
  TOTAL AREA(ACRES) =     16.35        PEAK FLOW RATE(CFS) =      43.77
```

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  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.59

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.61   HALFSTREET FLOOD WIDTH(FEET) =  22.35
  FLOW VELOCITY(FEET/SEC.) =  4.22   DEPTH*VELOCITY(FT*FT/SEC.) =   2.55
  LONGEST FLOWPATH FROM NODE  11140.00 TO NODE  11142.00 =   923.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011142.0 TO NODE LR011143.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1385.00  DOWNSTREAM ELEVATION(FEET) = 1380.00
  STREET LENGTH(FEET) =   234.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.94

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      53.65
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.63
    HALFSTREET FLOOD WIDTH(FEET) =   23.68
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.63
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.92
  STREET FLOW TRAVEL TIME(MIN.) =   0.84   Tc(MIN.) =  12.90
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.143
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.20      0.98      0.60    32
  MOBILE HOME PARK           A        6.51      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.30
  SUBAREA AREA(ACRES) =    7.71      SUBAREA RUNOFF(CFS) =   19.75
  EFFECTIVE AREA(ACRES) =     24.06    AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.31
  TOTAL AREA(ACRES) =     24.06        PEAK FLOW RATE(CFS) =      61.60

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.66   HALFSTREET FLOOD WIDTH(FEET) =  25.01
  FLOW VELOCITY(FEET/SEC.) =  4.78   DEPTH*VELOCITY(FT*FT/SEC.) =   3.15
  LONGEST FLOWPATH FROM NODE  11140.00 TO NODE  11143.00 =  1158.28 FEET.

****************************************************************************
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  FLOW PROCESS FROM NODE LR011143.0 TO NODE LR011144.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1380.00  DOWNSTREAM ELEVATION(FEET) = 1375.00
  STREET LENGTH(FEET) =   220.12   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.93

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      70.68
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.68
    HALFSTREET FLOOD WIDTH(FEET) =   26.63
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.07
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.44
  STREET FLOW TRAVEL TIME(MIN.) =   0.72   Tc(MIN.) =  13.63
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.042
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.42      0.98      0.60    32
  MOBILE HOME PARK           A        5.96      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.32
  SUBAREA AREA(ACRES) =    7.38      SUBAREA RUNOFF(CFS) =   18.15
  EFFECTIVE AREA(ACRES) =     31.44    AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.31
  TOTAL AREA(ACRES) =     31.44        PEAK FLOW RATE(CFS) =      77.56

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.70   HALFSTREET FLOOD WIDTH(FEET) =  28.50
  FLOW VELOCITY(FEET/SEC.) =  5.18   DEPTH*VELOCITY(FT*FT/SEC.) =   3.62
  LONGEST FLOWPATH FROM NODE  11140.00 TO NODE  11144.00 =  1378.40 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011144.0 TO NODE LR011145.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1375.00  DOWNSTREAM ELEVATION(FEET) = 1370.00
  STREET LENGTH(FEET) =   313.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00
```

```
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.01

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      91.93
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.77
    HALFSTREET FLOOD WIDTH(FEET) =   36.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.64
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.59
  STREET FLOW TRAVEL TIME(MIN.) =   1.12   Tc(MIN.) =  14.75
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.901
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        3.01      0.98      0.60    32
  MOBILE HOME PARK           A        9.39      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.33
  SUBAREA AREA(ACRES) =   12.40      SUBAREA RUNOFF(CFS) =   28.73
  EFFECTIVE AREA(ACRES) =     43.84    AREA-AVERAGED Fm(INCH/HR) =  0.31
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.32
  TOTAL AREA(ACRES) =     43.84        PEAK FLOW RATE(CFS) =     102.29

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.80   HALFSTREET FLOOD WIDTH(FEET) =  38.50
  FLOW VELOCITY(FEET/SEC.) =  4.72   DEPTH*VELOCITY(FT*FT/SEC.) =   3.77
  LONGEST FLOWPATH FROM NODE  11140.00 TO NODE  11145.00 =  1691.40 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011145.0 TO NODE LR011146.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1370.00  DOWNSTREAM ELEVATION(FEET) = 1365.00
  STREET LENGTH(FEET) =   291.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.00
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    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     112.38
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.81
    HALFSTREET FLOOD WIDTH(FEET) =   39.10
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.99
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.03
  STREET FLOW TRAVEL TIME(MIN.) =   0.97   Tc(MIN.) =  15.73
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.791
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        9.51      0.98      0.60    32
  MOBILE HOME PARK           A        0.56      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.58
  SUBAREA AREA(ACRES) =   10.07      SUBAREA RUNOFF(CFS) =   20.17
  EFFECTIVE AREA(ACRES) =     53.91    AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.37
  TOTAL AREA(ACRES) =     53.91        PEAK FLOW RATE(CFS) =     118.16

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.82   HALFSTREET FLOOD WIDTH(FEET) =  39.59
  FLOW VELOCITY(FEET/SEC.) =  5.07   DEPTH*VELOCITY(FT*FT/SEC.) =   4.15
  LONGEST FLOWPATH FROM NODE  11140.00 TO NODE  11146.00 =  1982.90 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011146.0 TO NODE LR011147.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1365.00  DOWNSTREAM ELEVATION(FEET) = 1357.00
  STREET LENGTH(FEET) =   397.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.96

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     123.75
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.81
    HALFSTREET FLOOD WIDTH(FEET) =   39.22
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.45
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.42
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  STREET FLOW TRAVEL TIME(MIN.) =   1.22   Tc(MIN.) =  16.94
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.669
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        5.97      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    5.97      SUBAREA RUNOFF(CFS) =   11.20
  EFFECTIVE AREA(ACRES) =     59.88    AREA-AVERAGED Fm(INCH/HR) =  0.38
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.39
  TOTAL AREA(ACRES) =     59.88        PEAK FLOW RATE(CFS) =     123.43

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.81   HALFSTREET FLOOD WIDTH(FEET) =  39.22
  FLOW VELOCITY(FEET/SEC.) =  5.43   DEPTH*VELOCITY(FT*FT/SEC.) =   4.41
  LONGEST FLOWPATH FROM NODE  11140.00 TO NODE  11147.00 =  2380.40 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011147.0 TO NODE LR011148.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1357.00  DOWNSTREAM ELEVATION(FEET) = 1353.00
  STREET LENGTH(FEET) =   412.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     128.71
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.90
    HALFSTREET FLOOD WIDTH(FEET) =   43.61
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.29
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.86
  STREET FLOW TRAVEL TIME(MIN.) =   1.60   Tc(MIN.) =  18.54
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.529
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  SCHOOL                     A        0.05      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        5.98      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
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  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    6.03      SUBAREA RUNOFF(CFS) =   10.55
  EFFECTIVE AREA(ACRES) =     65.91    AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.41
  TOTAL AREA(ACRES) =     65.91        PEAK FLOW RATE(CFS) =     126.39

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.90   HALFSTREET FLOOD WIDTH(FEET) =  43.43
  FLOW VELOCITY(FEET/SEC.) =  4.26   DEPTH*VELOCITY(FT*FT/SEC.) =   3.81
  LONGEST FLOWPATH FROM NODE  11140.00 TO NODE  11148.00 =  2792.90 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011148.0 TO NODE LR011149.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1353.00  DOWNSTREAM ELEVATION(FEET) = 1350.00
  STREET LENGTH(FEET) =   248.60   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     131.40
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.88
    HALFSTREET FLOOD WIDTH(FEET) =   42.58
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.66
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.09
  STREET FLOW TRAVEL TIME(MIN.) =   0.89   Tc(MIN.) =  19.43
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.458
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  SCHOOL                     A        0.20      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        5.51      0.98      0.60    32
  COMMERCIAL                 A        0.19      0.98      0.10    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.58
  SUBAREA AREA(ACRES) =    5.90      SUBAREA RUNOFF(CFS) =   10.03
  EFFECTIVE AREA(ACRES) =     71.81    AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.42
  TOTAL AREA(ACRES) =     71.81        PEAK FLOW RATE(CFS) =     132.26

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
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  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.88   HALFSTREET FLOOD WIDTH(FEET) =  42.64
  FLOW VELOCITY(FEET/SEC.) =  4.67   DEPTH*VELOCITY(FT*FT/SEC.) =   4.11
  LONGEST FLOWPATH FROM NODE  11140.00 TO NODE  11149.00 =  3041.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011149.0 TO NODE LR011150.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1350.00  DOWNSTREAM ELEVATION(FEET) = 1340.00
  STREET LENGTH(FEET) =   668.04   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.00

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     142.13
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.86
    HALFSTREET FLOOD WIDTH(FEET) =   35.89
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.57
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.81
  STREET FLOW TRAVEL TIME(MIN.) =   2.00   Tc(MIN.) =  21.43
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.318
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        7.86      0.98      0.60    32
  SCHOOL                     A        4.14      0.98      0.60    32
  COMMERCIAL                 A        0.51      0.98      0.10    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.58
  SUBAREA AREA(ACRES) =   12.51      SUBAREA RUNOFF(CFS) =   19.74
  EFFECTIVE AREA(ACRES) =     84.32    AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.45
  TOTAL AREA(ACRES) =     84.32        PEAK FLOW RATE(CFS) =     142.93

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.87   HALFSTREET FLOOD WIDTH(FEET) =  36.01
  FLOW VELOCITY(FEET/SEC.) =  5.56   DEPTH*VELOCITY(FT*FT/SEC.) =   4.82
  LONGEST FLOWPATH FROM NODE  11140.00 TO NODE  11150.00 =  3709.54 FEET.
```



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****************************************************************************
  FLOW PROCESS FROM NODE LR011150.0 TO NODE LR011151.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1340.00  DOWNSTREAM ELEVATION(FEET) = 1318.00
  STREET LENGTH(FEET) =  1208.52   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.95

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     159.13
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.87
    HALFSTREET FLOOD WIDTH(FEET) =   36.13
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.15
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.34
  STREET FLOW TRAVEL TIME(MIN.) =   3.28   Tc(MIN.) =  24.71
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.128
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       23.26      0.98      0.60    32
  SCHOOL                     A        0.04      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   23.30      SUBAREA RUNOFF(CFS) =   32.37
  EFFECTIVE AREA(ACRES) =    107.62    AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.48
  TOTAL AREA(ACRES) =    107.62        PEAK FLOW RATE(CFS) =     160.90

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.87   HALFSTREET FLOOD WIDTH(FEET) =  36.25
  FLOW VELOCITY(FEET/SEC.) =  6.17   DEPTH*VELOCITY(FT*FT/SEC.) =   5.38
  LONGEST FLOWPATH FROM NODE  11140.00 TO NODE  11151.00 =  4918.06 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011151.0 TO NODE LR011152.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1318.00  DOWNSTREAM ELEVATION(FEET) = 1300.00
  STREET LENGTH(FEET) =   810.03   CURB HEIGHT(INCHES) =  8.0
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 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     171.47
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.86
   HALFSTREET FLOOD WIDTH(FEET) =   35.77
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.76
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.83
 STREET FLOW TRAVEL TIME(MIN.) =   2.00   Tc(MIN.) =  26.71
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.031
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A       15.99      0.98      0.60    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.22      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =   16.21      SUBAREA RUNOFF(CFS) =   21.13
 EFFECTIVE AREA(ACRES) =    123.83    AREA-AVERAGED Fm(INCH/HR) =  0.48
 AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.50
 TOTAL AREA(ACRES) =    123.83        PEAK FLOW RATE(CFS) =     172.64

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.86   HALFSTREET FLOOD WIDTH(FEET) =  35.89
 FLOW VELOCITY(FEET/SEC.) =  6.76   DEPTH*VELOCITY(FT*FT/SEC.) =   5.84
 LONGEST FLOWPATH FROM NODE  11140.00 TO NODE  11152.00 =  5728.09 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR011152.0 TO NODE LR011152.0 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  26.71
 RAINFALL INTENSITY(INCH/HR) =   2.03
 AREA-AVERAGED Fm(INCH/HR) =  0.48
 AREA-AVERAGED Fp(INCH/HR) =  0.97
 AREA-AVERAGED Ap =  0.50
 EFFECTIVE STREAM AREA(ACRES) =   123.83
 TOTAL STREAM AREA(ACRES) =   123.83
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 PEAK FLOW RATE(CFS) AT CONFLUENCE =    172.64

 ** CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    423.27  26.66    2.034  0.96( 0.49) 0.52   298.4 LR011120.0
     2    172.64  26.71    2.031  0.97( 0.48) 0.50   123.8 LR011140.0

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    595.85  26.66    2.034  0.96( 0.49) 0.51   422.0 LR011120.0
     2    595.34  26.71    2.031  0.96( 0.49) 0.51   422.2 LR011140.0

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    595.85    Tc(MIN.) =    26.66
 EFFECTIVE AREA(ACRES) =   422.00   AREA-AVERAGED Fm(INCH/HR) =  0.49
 AREA-AVERAGED Fp(INCH/HR) =  0.96  AREA-AVERAGED Ap =  0.51
 TOTAL AREA(ACRES) =    422.21
 LONGEST FLOWPATH FROM NODE  11120.00 TO NODE  11152.00 =  7210.23 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR011152.0 TO NODE LR011153.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1300.00  DOWNSTREAM ELEVATION(FEET) = 1258.00
 STREET LENGTH(FEET) =  2580.10   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.98

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     638.17
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  1.38
   HALFSTREET FLOOD WIDTH(FEET) =   61.89
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.36
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   11.57
 STREET FLOW TRAVEL TIME(MIN.) =   5.15   Tc(MIN.) =  31.81
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.829
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 A       27.28      0.98      0.10    32
 MOBILE HOME PARK           A       16.76      0.98      0.25    32
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RESIDENTIAL
"3-4 DWELLINGS/ACRE"       A       11.51      0.98      0.60    32
MOBILE HOME PARK           B        1.73      0.75      0.25    56
COMMERCIAL                 B        1.22      0.75      0.10    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        0.69      0.75      0.60    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.96
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.25
SUBAREA AREA(ACRES) =   59.19      SUBAREA RUNOFF(CFS) =   84.66
EFFECTIVE AREA(ACRES) =    481.19    AREA-AVERAGED Fm(INCH/HR) =  0.46
AREA-AVERAGED Fp(INCH/HR) =  0.96  AREA-AVERAGED Ap =  0.48
TOTAL AREA(ACRES) =    481.40        PEAK FLOW RATE(CFS) =     595.85
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.35   HALFSTREET FLOOD WIDTH(FEET) =  60.30
FLOW VELOCITY(FEET/SEC.) =  8.22   DEPTH*VELOCITY(FT*FT/SEC.) =  11.12

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.98
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  69.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  17.12
PIPE-FLOW(CFS) =    444.82
PIPEFLOW TRAVEL TIME(MIN.) =   2.51    Tc(MIN.) =  29.17
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.927
SUBAREA AREA(ACRES) =   59.19      SUBAREA RUNOFF(CFS) =   89.85
TOTAL AREA(ACRES) =    481.40        PEAK FLOW RATE(CFS) =    635.61

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  190.79
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.93
  HALFSTREET FLOOD WIDTH(FEET) =   39.31
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.22
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.80

** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
    1    635.61  29.17    1.927  0.96( 0.46) 0.48   481.2 LR011120.0
    2    635.10  29.22    1.925  0.96( 0.46) 0.48   481.4 LR011140.0
NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) =    635.61  Tc(MIN.) =  29.17
AREA-AVERAGED Fm(INCH/HR) =  0.46  AREA-AVERAGED Fp(INCH/HR) =  0.96
AREA-AVERAGED Ap =  0.48  EFFECTIVE AREA(ACRES) =    481.19
LONGEST FLOWPATH FROM NODE  11120.00 TO NODE  11153.00 =  9790.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011153.0 TO NODE LR011153.0 IS CODE =  11
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----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    635.61  29.17    1.927  0.96( 0.46) 0.48   481.2 LR011120.0
      2    635.10  29.22    1.925  0.96( 0.46) 0.48   481.4 LR011140.0
  LONGEST FLOWPATH FROM NODE  11120.00 TO NODE  11153.00 =  9790.33 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    167.81  32.16    1.817  0.97( 0.32) 0.33   124.8 LR011100.0
  LONGEST FLOWPATH FROM NODE  11100.00 TO NODE  11153.00 =  7147.74 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    798.99  29.17    1.927  0.96( 0.43) 0.45   594.4 LR011120.0
      2    798.55  29.22    1.925  0.96( 0.43) 0.45   594.8 LR011140.0
      3    756.28  32.16    1.817  0.96( 0.43) 0.45   606.2 LR011100.0
    TOTAL AREA(ACRES) =    606.21

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      798.99  Tc(MIN.) =   29.175
  EFFECTIVE AREA(ACRES) =    594.41  AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.96  AREA-AVERAGED Ap =  0.45
  TOTAL AREA(ACRES) =    606.21
  LONGEST FLOWPATH FROM NODE  11120.00 TO NODE  11153.00 =  9790.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011153.0 TO NODE LR011153.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR011153.0 TO NODE LR011154.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1258.00  DOWNSTREAM(FEET) =   1257.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1299.38   CHANNEL SLOPE =  0.0008
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   9.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    798.99
  FLOW VELOCITY(FEET/SEC.) =   6.37   FLOW DEPTH(FEET) =   6.17
  TRAVEL TIME(MIN.) =   3.40   Tc(MIN.) =  32.58
  LONGEST FLOWPATH FROM NODE  11120.00 TO NODE  11154.00 = 11089.71 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011154.0 TO NODE LR011154.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```

```
  MAINLINE Tc(MIN) =  32.58
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.803
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       18.88      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       18.38      0.98      0.60    32
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B       14.24      0.75      0.50    56
  COMMERCIAL                 A       13.60      0.98      0.10    32
  MOBILE HOME PARK           A       10.81      0.98      0.25    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        6.56      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.87
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.34
  SUBAREA AREA(ACRES) =   82.47      SUBAREA RUNOFF(CFS) =  111.89
  EFFECTIVE AREA(ACRES) =    676.88   AREA-AVERAGED Fm(INCH/HR) =  0.42
  AREA-AVERAGED Fp(INCH/HR) =  0.95  AREA-AVERAGED Ap =  0.44
  TOTAL AREA(ACRES) =    688.68       PEAK FLOW RATE(CFS) =     844.90

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.40

****************************************************************************
  FLOW PROCESS FROM NODE LR011154.0 TO NODE LR011154.0 IS CODE =  71
----------------------------------------------------------------------------
  >>>>>PEAK FLOW RATE ESTIMATOR CHANGED TO UNIT-HYDROGRAPH METHOD<<<<<
  >>>>>USING TIME-OF-CONCENTRATION OF LONGEST FLOWPATH<<<<<
============================================================================
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.42;30M= 0.87;1H= 1.14;3H= 1.86;6H= 2.52;24H= 4.97
  S-GRAPH: VALLEY(DEV.)=100.0%;VALLEY(UNDEV.)/DESERT=  0.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.54; LAG(HR) = 0.43; Fm(INCH/HR) = 0.41; Ybar = 0.45
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 1.00; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    688.68
  LONGEST FLOWPATH FROM NODE  11120.00 TO NODE  11154.00 = 11089.71 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0360; Lca/L=0.4,n=.0323; Lca/L=0.5,n=.0297;Lca/L=0.6,n=.0277
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     166.71
  UNIT-HYDROGRAPH METHOD PEAK FLOW RATE(CFS) =    843.24
  TOTAL PEAK FLOW RATE(CFS) =    843.24 (SOURCE FLOW INCLUDED)
  RATIONAL METHOD PEAK FLOW RATE(CFS) =    844.90
   (UPSTREAM NODE PEAK FLOW RATE(CFS) =    844.90)
  PEAK FLOW RATE(CFS) USED =    844.90

****************************************************************************
  FLOW PROCESS FROM NODE LR011154.0 TO NODE LR011155.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1257.00  DOWNSTREAM(FEET) =   1252.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1418.25   CHANNEL SLOPE =  0.0035
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   2.000
```



```
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   9.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    844.90
  FLOW VELOCITY(FEET/SEC.) =  11.35   FLOW DEPTH(FEET) =   4.42
  TRAVEL TIME(MIN.) =   2.08   Tc(MIN.) =  34.66
  LONGEST FLOWPATH FROM NODE  11120.00 TO NODE  11155.00 = 12507.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011155.0 TO NODE LR011155.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  34.66
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.737
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       28.26      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       18.98      0.75      0.60    56
  MOBILE HOME PARK           B       14.02      0.75      0.25    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B       12.58      0.75      0.50    56
  MOBILE HOME PARK           A       11.82      0.98      0.25    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        3.32      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.79
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.33
  SUBAREA AREA(ACRES) =   88.98
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.41;30M= 0.84;1H= 1.11;3H= 1.81;6H= 2.45;24H= 4.80
  S-GRAPH: VALLEY(DEV.)=100.0%;VALLEY(UNDEV.)/DESERT=  0.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.58; LAG(HR) = 0.46; Fm(INCH/HR) = 0.40; Ybar = 0.44
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    777.66
  LONGEST FLOWPATH FROM NODE  11120.00 TO NODE  11155.00 = 12507.96 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0344; Lca/L=0.4,n=.0309; Lca/L=0.5,n=.0284;Lca/L=0.6,n=.0265
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     185.71
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    888.32
  TOTAL AREA(ACRES) =    777.66       PEAK FLOW RATE(CFS) =     888.32

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.45

****************************************************************************
  FLOW PROCESS FROM NODE LR011155.0 TO NODE LR011156.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1252.00  DOWNSTREAM(FEET) =   1250.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1431.00   CHANNEL SLOPE =  0.0014
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   9.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    888.32
```

```
  FLOW VELOCITY(FEET/SEC.) =   8.17   FLOW DEPTH(FEET) =   5.64
  TRAVEL TIME(MIN.) =   2.92   Tc(MIN.) =  37.58
  LONGEST FLOWPATH FROM NODE  11120.00 TO NODE  11156.00 = 13938.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011156.0 TO NODE LR011156.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  37.58
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.655
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 A       26.66      0.98      0.10    32
  COMMERCIAL                 B       29.20      0.75      0.10    56
  MOBILE HOME PARK           A        5.04      0.98      0.25    32
  MOBILE HOME PARK           B        3.45      0.75      0.25    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B       21.44      0.75      0.50    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.28      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.79
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.24
  SUBAREA AREA(ACRES) =   91.07
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.40;30M= 0.82;1H= 1.08;3H= 1.76;6H= 2.39;24H= 4.66
  S-GRAPH: VALLEY(DEV.)=100.0%;VALLEY(UNDEV.)/DESERT=  0.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.63; LAG(HR) = 0.50; Fm(INCH/HR) = 0.37; Ybar = 0.42
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    868.73
  LONGEST FLOWPATH FROM NODE  11120.00 TO NODE  11156.00 = 13938.96 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0338; Lca/L=0.4,n=.0303; Lca/L=0.5,n=.0278;Lca/L=0.6,n=.0259
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     207.33
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    917.80
  TOTAL AREA(ACRES) =    868.73       PEAK FLOW RATE(CFS) =     917.80

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.50

****************************************************************************
  FLOW PROCESS FROM NODE LR011156.0 TO NODE LR011157.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1250.00  DOWNSTREAM(FEET) =   1240.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2187.11   CHANNEL SLOPE =  0.0046
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   9.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    917.80
  FLOW VELOCITY(FEET/SEC.) =  12.76   FLOW DEPTH(FEET) =   4.32
  TRAVEL TIME(MIN.) =   2.86   Tc(MIN.) =  40.43
  LONGEST FLOWPATH FROM NODE  11120.00 TO NODE  11157.00 = 16126.07 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR011157.0 TO NODE LR011157.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  40.43
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.584
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.40      0.75      0.60    56
  COMMERCIAL                 B      102.71      0.75      0.10    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        8.39      0.75      0.50    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.54      0.98      0.60    32
  COMMERCIAL                 A       26.33      0.98      0.10    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.79
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.15
  SUBAREA AREA(ACRES) =  144.37
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.41;30M= 0.84;1H= 1.11;3H= 1.80;6H= 2.45;24H= 4.78
  S-GRAPH: VALLEY(DEV.)=100.0%;VALLEY(UNDEV.)/DESERT=  0.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.67; LAG(HR) = 0.54; Fm(INCH/HR) = 0.34; Ybar = 0.38
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.95; 30M = 0.95; 1HR = 0.95;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1013.10
  LONGEST FLOWPATH FROM NODE  11120.00 TO NODE  11157.00 = 16126.07 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0320; Lca/L=0.4,n=.0287; Lca/L=0.5,n=.0264;Lca/L=0.6,n=.0246
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     261.79
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1081.31
  TOTAL AREA(ACRES) =   1013.10       PEAK FLOW RATE(CFS) =    1081.31

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR011157.0 TO NODE LR011158.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1240.00  DOWNSTREAM(FEET) =   1220.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1288.55   CHANNEL SLOPE =  0.0155
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   9.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   1081.31
  FLOW VELOCITY(FEET/SEC.) =  20.89   FLOW DEPTH(FEET) =   3.47
  TRAVEL TIME(MIN.) =   1.03   Tc(MIN.) =  41.46
  LONGEST FLOWPATH FROM NODE  11120.00 TO NODE  11158.00 = 17414.62 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011158.0 TO NODE LR011158.0 IS CODE =  81
```

```
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN) =  41.46
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.560
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       84.86      0.75      0.10    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.58      0.61      1.00    66
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        3.91      0.75      0.50    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.52      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.13
  SUBAREA AREA(ACRES) =   90.87
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.41;30M= 0.85;1H= 1.12;3H= 1.82;6H= 2.47;24H= 4.84
  S-GRAPH: VALLEY(DEV.)= 99.9%;VALLEY(UNDEV.)/DESERT=  0.1%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.69; LAG(HR) = 0.55; Fm(INCH/HR) = 0.32; Ybar = 0.36
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.95; 30M = 0.95; 1HR = 0.95;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1103.97
  LONGEST FLOWPATH FROM NODE  11120.00 TO NODE  11158.00 = 17414.62 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0313; Lca/L=0.4,n=.0280; Lca/L=0.5,n=.0257;Lca/L=0.6,n=.0240
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     296.80
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1180.67
  TOTAL AREA(ACRES) =   1103.97       PEAK FLOW RATE(CFS) =    1180.67

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =   1103.97  TC(MIN.) =     41.46
  AREA-AVERAGED Fm(INCH/HR)=  0.32   Ybar =  0.36
  PEAK FLOW RATE(CFS)   =   1180.67
================================================================================
================================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

```
**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
         (c) Copyright 1983-2002 Advanced Engineering Software (aes)
             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                           County of San Bernardino
                         Transportation Flood Control

                          Water Resources Division

--------------------------------------------------------------------------
  FILE NAME: LR0112ZZ.Z13
  TIME/DATE OF STUDY: 10:44 09/13/2004
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.2500

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)     (n)
===  =====  ========  =================  ======  =====  ====  =====  =======
  1   18.0     12.0   0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  2   20.0     15.0   0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  3   22.0     15.0   0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  4   15.0     10.0   0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  5   18.0     10.0   0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  6   15.0     10.0   0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  7   16.0     10.0   0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  8   16.0     10.0   0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  9   17.0     10.0   0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 10   30.0     15.0   0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 11   24.0     15.0   0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 12   24.0     15.0   0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 13   32.0     20.0   0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 14   39.0     20.0   0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 15   36.0     20.0   0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 16   12.5      5.0   0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 17   20.0     10.0   0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 18   26.0     15.0   0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 19   52.0     20.0   0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
```



```
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


**************************************************************************
  FLOW PROCESS FROM NODE LR011200.0 TO NODE LR011201.0 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   934.40
  ELEVATION DATA: UPSTREAM(FEET) =   1255.00  DOWNSTREAM(FEET) =   1250.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   17.080
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.657
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        8.65      0.75       0.50    56   17.08
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA RUNOFF(CFS) =     17.77
  TOTAL AREA(ACRES) =      8.65   PEAK FLOW RATE(CFS) =     17.77

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

**************************************************************************
  FLOW PROCESS FROM NODE LR011201.0 TO NODE LR011202.0 IS CODE =  92
--------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
==========================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1250.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1247.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   291.59
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.539
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  COMMERCIAL                  B        4.68      0.75      0.10    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"        B        3.61      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.27
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     26.48
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.64
  AVERAGE FLOW DEPTH(FEET) =   0.66   FLOOD WIDTH(FEET) =   39.52
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   1.33   Tc(MIN.) =  18.41
  SUBAREA AREA(ACRES) =    8.29       SUBAREA RUNOFF(CFS) =   17.42
  EFFECTIVE AREA(ACRES) =   16.94     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.75  AREA-AVERAGED Ap =   0.39
  TOTAL AREA(ACRES) =     16.94         PEAK FLOW RATE(CFS) =      34.27

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.70   FLOOD WIDTH(FEET) =   44.30
  FLOW VELOCITY(FEET/SEC.) =   3.82   DEPTH*VELOCITY(FT*FT/SEC) =   2.68
  LONGEST FLOWPATH FROM NODE  11200.00 TO NODE  11202.00 =  1225.99 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011202.0 TO NODE LR011203.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1247.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1240.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   419.50
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.429
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                  B       12.04      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     47.01
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.92
  AVERAGE FLOW DEPTH(FEET) =   0.71   FLOOD WIDTH(FEET) =   45.79
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   1.42   Tc(MIN.) =  19.83
  SUBAREA AREA(ACRES) =   12.04       SUBAREA RUNOFF(CFS) =   25.51
  EFFECTIVE AREA(ACRES) =   28.98     AREA-AVERAGED Fm(INCH/HR) =   0.20
  AREA-AVERAGED Fp(INCH/HR) =   0.75  AREA-AVERAGED Ap =   0.27
  TOTAL AREA(ACRES) =     28.98         PEAK FLOW RATE(CFS) =      58.09

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.75   FLOOD WIDTH(FEET) =   50.12
  FLOW VELOCITY(FEET/SEC.) =   5.13   DEPTH*VELOCITY(FT*FT/SEC) =   3.85
  LONGEST FLOWPATH FROM NODE  11200.00 TO NODE  11203.00 =  1645.49 FEET.
```



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****************************************************************************
  FLOW PROCESS FROM NODE LR011203.0 TO NODE LR011204.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1240.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1228.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   824.00
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.253
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                  B       24.00      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     81.57
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.20
  AVERAGE FLOW DEPTH(FEET) =   0.83   FLOOD WIDTH(FEET) =   59.53
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   2.64   Tc(MIN.) =  22.48
  SUBAREA AREA(ACRES) =   24.00       SUBAREA RUNOFF(CFS) =   47.05
  EFFECTIVE AREA(ACRES) =   52.98     AREA-AVERAGED Fm(INCH/HR) =   0.14
  AREA-AVERAGED Fp(INCH/HR) =   0.75  AREA-AVERAGED Ap =   0.19
  TOTAL AREA(ACRES) =     52.98         PEAK FLOW RATE(CFS) =     100.56

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.87   FLOOD WIDTH(FEET) =   64.76
  FLOW VELOCITY(FEET/SEC.) =   5.45   DEPTH*VELOCITY(FT*FT/SEC) =   4.77
  LONGEST FLOWPATH FROM NODE  11200.00 TO NODE  11204.00 =  2469.49 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011204.0 TO NODE LR011205.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1228.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1217.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   696.50
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.141
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        1.24      0.75      0.60    56
  COMMERCIAL                  B       18.77      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.13
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    118.96
```

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  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.83
  AVERAGE FLOW DEPTH(FEET) =   0.90   FLOOD WIDTH(FEET) =   68.19
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   1.99   Tc(MIN.) =  24.47
  SUBAREA AREA(ACRES) =   20.01       SUBAREA RUNOFF(CFS) =   36.79
  EFFECTIVE AREA(ACRES) =   72.99     AREA-AVERAGED Fm(INCH/HR) =   0.13
  AREA-AVERAGED Fp(INCH/HR) =   0.75  AREA-AVERAGED Ap =   0.18
  TOTAL AREA(ACRES) =     72.99         PEAK FLOW RATE(CFS) =     132.02

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.93   FLOOD WIDTH(FEET) =   71.03
  FLOW VELOCITY(FEET/SEC.) =   5.98   DEPTH*VELOCITY(FT*FT/SEC) =   5.55
  LONGEST FLOWPATH FROM NODE  11200.00 TO NODE  11205.00 =  3165.99 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011205.0 TO NODE LR011216.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1217.00  DOWNSTREAM ELEVATION(FEET) = 1210.00
  STREET LENGTH(FEET) =  1299.58   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     138.14
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.00
    HALFSTREET FLOOD WIDTH(FEET) =   55.91
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.31
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.33
  STREET FLOW TRAVEL TIME(MIN.) =   6.54   Tc(MIN.) =  31.01
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.857
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.81      0.75      0.60    56
  COMMERCIAL                 B        6.99      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.15
  SUBAREA AREA(ACRES) =    7.80      SUBAREA RUNOFF(CFS) =   12.24
  EFFECTIVE AREA(ACRES) =     80.79    AREA-AVERAGED Fm(INCH/HR) =  0.13
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.17
  TOTAL AREA(ACRES) =     80.79        PEAK FLOW RATE(CFS) =     132.02
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
```



```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.99   HALFSTREET FLOOD WIDTH(FEET) =  55.36
  FLOW VELOCITY(FEET/SEC.) =  3.26   DEPTH*VELOCITY(FT*FT/SEC.) =   3.24
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1299.6 FT WITH ELEVATION-DROP =   7.0 FT, IS   19.2 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  11216.00
  LONGEST FLOWPATH FROM NODE  11200.00 TO NODE  11216.00 =  4465.57 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011216.0 TO NODE LR011216.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  31.01
  RAINFALL INTENSITY(INCH/HR) =   1.86
  AREA-AVERAGED Fm(INCH/HR) =  0.13
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.17
  EFFECTIVE STREAM AREA(ACRES) =    80.79
  TOTAL STREAM AREA(ACRES) =    80.79
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    132.02

****************************************************************************
  FLOW PROCESS FROM NODE LR011210.0 TO NODE LR011211.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   966.99
  ELEVATION DATA: UPSTREAM(FEET) =   1258.00  DOWNSTREAM(FEET) =   1245.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.402
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.943
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        3.66      0.75      0.50    56   14.40
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA RUNOFF(CFS) =      8.46
  TOTAL AREA(ACRES) =      3.66   PEAK FLOW RATE(CFS) =      8.46

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR011211.0 TO NODE LR011212.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
```

```
==========================================================================
  UPSTREAM ELEVATION(FEET) = 1245.00  DOWNSTREAM ELEVATION(FEET) = 1243.00
  STREET LENGTH(FEET) =   163.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      12.95
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.46
    HALFSTREET FLOOD WIDTH(FEET) =   14.98
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.66
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.22
  STREET FLOW TRAVEL TIME(MIN.) =   1.02   Tc(MIN.) =  15.43
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.824
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        0.02      0.98      0.50    32
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        4.05      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =    4.07      SUBAREA RUNOFF(CFS) =    8.97
  EFFECTIVE AREA(ACRES) =      7.73    AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =      7.73        PEAK FLOW RATE(CFS) =      17.04

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.49   HALFSTREET FLOOD WIDTH(FEET) =  16.78
  FLOW VELOCITY(FEET/SEC.) =  2.84   DEPTH*VELOCITY(FT*FT/SEC.) =   1.40
  LONGEST FLOWPATH FROM NODE  11210.00 TO NODE  11212.00 =  1130.49 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011212.0 TO NODE LR011213.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
==========================================================================
  UPSTREAM ELEVATION(FEET) = 1243.00  DOWNSTREAM ELEVATION(FEET) = 1238.00
  STREET LENGTH(FEET) =   291.09   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
```



```
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.04

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      27.89
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.54
    HALFSTREET FLOOD WIDTH(FEET) =   19.12
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.63
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.96
  STREET FLOW TRAVEL TIME(MIN.) =   1.34   Tc(MIN.) =  16.76
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.686
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        1.00      0.98      0.50    32
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 A        2.32      0.88      1.00    44
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        2.10      0.75      0.50    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.19      0.98      0.60    32
  COMMERCIAL                 A        0.25      0.98      0.10    32
  COMMERCIAL                 B        4.52      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.85
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.43
  SUBAREA AREA(ACRES) =   10.38      SUBAREA RUNOFF(CFS) =   21.69
  EFFECTIVE AREA(ACRES) =     18.11    AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.80  AREA-AVERAGED Ap =  0.46
  TOTAL AREA(ACRES) =     18.11        PEAK FLOW RATE(CFS) =      37.77

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.59   HALFSTREET FLOOD WIDTH(FEET) =  21.54
  FLOW VELOCITY(FEET/SEC.) =  3.91   DEPTH*VELOCITY(FT*FT/SEC.) =   2.30
  LONGEST FLOWPATH FROM NODE  11210.00 TO NODE  11213.00 =  1421.58 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011213.0 TO NODE LR011214.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
==========================================================================
  UPSTREAM ELEVATION(FEET) = 1238.00  DOWNSTREAM ELEVATION(FEET) = 1231.00
  STREET LENGTH(FEET) =   426.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
```

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  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.05

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      55.90
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.66
    HALFSTREET FLOOD WIDTH(FEET) =   25.29
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.24
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.82
  STREET FLOW TRAVEL TIME(MIN.) =   1.67   Tc(MIN.) =  18.44
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.537
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 A        4.75      0.98      0.10    32
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 A        6.63      0.88      1.00    44
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.56      0.98      0.60    32
  COMMERCIAL                 B        6.74      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.88
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.43
  SUBAREA AREA(ACRES) =   18.68      SUBAREA RUNOFF(CFS) =   36.24
  EFFECTIVE AREA(ACRES) =     36.79    AREA-AVERAGED Fm(INCH/HR) =  0.38
  AREA-AVERAGED Fp(INCH/HR) =  0.84  AREA-AVERAGED Ap =  0.45
  TOTAL AREA(ACRES) =     36.79        PEAK FLOW RATE(CFS) =      71.58

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.72   HALFSTREET FLOOD WIDTH(FEET) =  30.31
  FLOW VELOCITY(FEET/SEC.) =  4.47   DEPTH*VELOCITY(FT*FT/SEC.) =   3.20
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  426.5 FT WITH ELEVATION-DROP =   7.0 FT, IS   65.1 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  11214.00
  LONGEST FLOWPATH FROM NODE  11210.00 TO NODE  11214.00 =  1848.08 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011214.0 TO NODE LR011215.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1231.00  DOWNSTREAM ELEVATION(FEET) = 1218.00
  STREET LENGTH(FEET) =   803.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
```



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  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.05

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     106.99
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.81
    HALFSTREET FLOOD WIDTH(FEET) =   39.38
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.79
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.86
  STREET FLOW TRAVEL TIME(MIN.) =   2.80   Tc(MIN.) =  21.23
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.331
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 A       24.86      0.98      0.10    32
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 A        1.07      0.88      1.00    44
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.93      0.98      0.60    32
  COMMERCIAL                 B        8.86      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.91
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.14
  SUBAREA AREA(ACRES) =   35.72      SUBAREA RUNOFF(CFS) =   70.83
  EFFECTIVE AREA(ACRES) =     72.51    AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  0.30
  TOTAL AREA(ACRES) =     72.51        PEAK FLOW RATE(CFS) =     135.59

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.86   HALFSTREET FLOOD WIDTH(FEET) =  45.00
  FLOW VELOCITY(FEET/SEC.) =  5.00   DEPTH*VELOCITY(FT*FT/SEC.) =   4.32
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  803.0 FT WITH ELEVATION-DROP =  13.0 FT, IS  113.2 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  11215.00
  LONGEST FLOWPATH FROM NODE  11210.00 TO NODE  11215.00 =  2651.08 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011215.0 TO NODE LR011216.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1218.00  DOWNSTREAM ELEVATION(FEET) = 1210.00
  STREET LENGTH(FEET) =   711.04   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     152.41
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  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.94
  HALFSTREET FLOOD WIDTH(FEET) =   52.67
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.39
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.13
 STREET FLOW TRAVEL TIME(MIN.) =   2.70   Tc(MIN.) =  23.93
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.170
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 A       10.02      0.98      0.10    32
 COMMERCIAL                 B        7.05      0.75      0.10    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        0.51      0.98      0.60    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.60      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.87
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.13
 SUBAREA AREA(ACRES) =   18.18      SUBAREA RUNOFF(CFS) =   33.64
 EFFECTIVE AREA(ACRES) =     90.69    AREA-AVERAGED Fm(INCH/HR) =  0.23
 AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  0.26
 TOTAL AREA(ACRES) =     90.69        PEAK FLOW RATE(CFS) =     158.70

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.95   HALFSTREET FLOOD WIDTH(FEET) =  53.16
 FLOW VELOCITY(FEET/SEC.) =  4.44   DEPTH*VELOCITY(FT*FT/SEC.) =   4.22
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  711.0 FT WITH ELEVATION-DROP =   8.0 FT, IS   57.0 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  11216.00
 LONGEST FLOWPATH FROM NODE  11210.00 TO NODE  11216.00 =  3362.12 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR011216.0 TO NODE LR011216.0 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  23.93
 RAINFALL INTENSITY(INCH/HR) =   2.17
 AREA-AVERAGED Fm(INCH/HR) =  0.23
 AREA-AVERAGED Fp(INCH/HR) =  0.86
 AREA-AVERAGED Ap =  0.26
 EFFECTIVE STREAM AREA(ACRES) =    90.69
 TOTAL STREAM AREA(ACRES) =    90.69
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    158.70

 ** CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    132.02  31.01    1.857  0.75( 0.13) 0.17    80.8 LR011200.0
     2    158.70  23.93    2.170  0.86( 0.23) 0.26    90.7 LR011210.0
```



```
 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    279.01  23.93    2.170  0.82( 0.19) 0.23   153.0 LR011210.0
     2    265.22  31.01    1.857  0.82( 0.18) 0.22   171.5 LR011200.0

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    279.01    Tc(MIN.) =    23.93
 EFFECTIVE AREA(ACRES) =   153.04   AREA-AVERAGED Fm(INCH/HR) =  0.19
 AREA-AVERAGED Fp(INCH/HR) =  0.82  AREA-AVERAGED Ap =  0.23
 TOTAL AREA(ACRES) =    171.48
 LONGEST FLOWPATH FROM NODE  11200.00 TO NODE  11216.00 =  4465.57 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR011216.0 TO NODE LR011228.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 12 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1210.00  DOWNSTREAM ELEVATION(FEET) = 1209.00
 STREET LENGTH(FEET) =  1455.69   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 24.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     283.60
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  1.84
  HALFSTREET FLOOD WIDTH(FEET) =   82.73
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.05
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.77
 STREET FLOW TRAVEL TIME(MIN.) =  11.86   Tc(MIN.) =  35.79
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.704
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.02      0.75      0.60    56
 COMMERCIAL                 B        1.91      0.75      0.10    56
 COMMERCIAL                 A        3.22      0.98      0.10    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        0.57      0.98      0.60    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.85
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.22
 SUBAREA AREA(ACRES) =    6.72      SUBAREA RUNOFF(CFS) =    9.18
 EFFECTIVE AREA(ACRES) =    159.76    AREA-AVERAGED Fm(INCH/HR) =  0.19
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  AREA-AVERAGED Fp(INCH/HR) =  0.83  AREA-AVERAGED Ap =  0.23
  TOTAL AREA(ACRES) =    178.20        PEAK FLOW RATE(CFS) =     279.01
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.83   HALFSTREET FLOOD WIDTH(FEET) =  82.18
  FLOW VELOCITY(FEET/SEC.) =  2.04   DEPTH*VELOCITY(FT*FT/SEC.) =   3.73

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 1.07
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  96.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.38
  PIPE-FLOW(CFS) =    220.47
  PIPEFLOW TRAVEL TIME(MIN.) =   5.54    Tc(MIN.) =  29.47
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.915
  SUBAREA AREA(ACRES) =    6.72      SUBAREA RUNOFF(CFS) =   10.46
  TOTAL AREA(ACRES) =    178.20        PEAK FLOW RATE(CFS) =    279.01
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   58.53
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.07
    HALFSTREET FLOOD WIDTH(FEET) =   44.03
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.44
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.54
  LONGEST FLOWPATH FROM NODE  11200.00 TO NODE  11228.00 =  5921.26 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011228.0 TO NODE LR011228.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  29.47
  RAINFALL INTENSITY(INCH/HR) =   1.92
  AREA-AVERAGED Fm(INCH/HR) =  0.19
  AREA-AVERAGED Fp(INCH/HR) =  0.83
  AREA-AVERAGED Ap =  0.23
  EFFECTIVE STREAM AREA(ACRES) =   159.76
  TOTAL STREAM AREA(ACRES) =   178.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    279.01

****************************************************************************
  FLOW PROCESS FROM NODE LR011220.0 TO NODE LR011221.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
```



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============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   457.70
  ELEVATION DATA: UPSTREAM(FEET) =   1250.00  DOWNSTREAM(FEET) =   1243.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.132
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.146
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 A        2.72      0.88       1.00    44   18.89
  COMMERCIAL                 B        1.97      0.75       0.10    56    8.13
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        1.96      0.75       0.50    56   10.41
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        0.87      0.98       0.50    32   10.41
  COMMERCIAL                 A        0.41      0.98       0.10    32    8.13
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.38      0.75       0.60    56   11.02
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.85
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.55
  SUBAREA RUNOFF(CFS) =     27.49
  TOTAL AREA(ACRES) =      8.31   PEAK FLOW RATE(CFS) =     27.49

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.39

****************************************************************************
  FLOW PROCESS FROM NODE LR011221.0 TO NODE LR011222.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1243.00  DOWNSTREAM ELEVATION(FEET) = 1241.00
  STREET LENGTH(FEET) =   170.65   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      32.48
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.56
    HALFSTREET FLOOD WIDTH(FEET) =   20.76
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.47
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.93
  STREET FLOW TRAVEL TIME(MIN.) =   0.82   Tc(MIN.) =   8.95
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.915
  SUBAREA LOSS RATE DATA(AMC  II):
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 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
COMMERCIAL                 B        0.04      0.75      0.10    56
COMMERCIAL                 A        1.72      0.98      0.10    32
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       A        0.16      0.98      0.60    32
AGRICULTURAL FAIR COVER
"ORCHARDS"                 A        1.26      0.88      1.00    44
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.90
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.48
SUBAREA AREA(ACRES) =    3.18      SUBAREA RUNOFF(CFS) =    9.97
EFFECTIVE AREA(ACRES) =     11.49    AREA-AVERAGED Fm(INCH/HR) =  0.46
AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  0.53
TOTAL AREA(ACRES) =     11.49        PEAK FLOW RATE(CFS) =      35.73

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.57   HALFSTREET FLOOD WIDTH(FEET) =  21.49
FLOW VELOCITY(FEET/SEC.) =  3.58   DEPTH*VELOCITY(FT*FT/SEC.) =   2.04
LONGEST FLOWPATH FROM NODE  11220.00 TO NODE  11222.00 =   628.35 FEET.

****************************************************************************
FLOW PROCESS FROM NODE LR011222.0 TO NODE LR011223.0 IS CODE =  63
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 1241.00  DOWNSTREAM ELEVATION(FEET) = 1239.00
STREET LENGTH(FEET) =   199.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      41.88
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.61
  HALFSTREET FLOOD WIDTH(FEET) =   23.45
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.57
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.17
STREET FLOW TRAVEL TIME(MIN.) =   0.93   Tc(MIN.) =   9.88
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.689
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
COMMERCIAL                 A        3.62      0.98      0.10    32
COMMERCIAL                 B        0.02      0.75      0.10    56
RESIDENTIAL
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"3-4 DWELLINGS/ACRE"       A        0.19      0.98      0.60    32
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.12
SUBAREA AREA(ACRES) =    3.83      SUBAREA RUNOFF(CFS) =   12.30
EFFECTIVE AREA(ACRES) =     15.32    AREA-AVERAGED Fm(INCH/HR) =  0.38
AREA-AVERAGED Fp(INCH/HR) =  0.87  AREA-AVERAGED Ap =  0.43
TOTAL AREA(ACRES) =     15.32        PEAK FLOW RATE(CFS) =      45.70

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.62   HALFSTREET FLOOD WIDTH(FEET) =  24.24
FLOW VELOCITY(FEET/SEC.) =  3.66   DEPTH*VELOCITY(FT*FT/SEC.) =   2.29
LONGEST FLOWPATH FROM NODE  11220.00 TO NODE  11223.00 =   827.35 FEET.

****************************************************************************
FLOW PROCESS FROM NODE LR011223.0 TO NODE LR011224.0 IS CODE =  63
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 1239.00  DOWNSTREAM ELEVATION(FEET) = 1235.00
STREET LENGTH(FEET) =   319.58   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      54.47
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.64
  HALFSTREET FLOOD WIDTH(FEET) =   24.85
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.16
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.65
STREET FLOW TRAVEL TIME(MIN.) =   1.28   Tc(MIN.) =  11.16
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.429
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
COMMERCIAL                 B        0.50      0.75      0.10    56
COMMERCIAL                 A        5.09      0.98      0.10    32
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       A        0.30      0.98      0.60    32
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.96
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.13
SUBAREA AREA(ACRES) =    5.89      SUBAREA RUNOFF(CFS) =   17.54
EFFECTIVE AREA(ACRES) =     21.21    AREA-AVERAGED Fm(INCH/HR) =  0.30
AREA-AVERAGED Fp(INCH/HR) =  0.88  AREA-AVERAGED Ap =  0.35
TOTAL AREA(ACRES) =     21.21        PEAK FLOW RATE(CFS) =      59.65
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  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.65   HALFSTREET FLOOD WIDTH(FEET) =  25.70
  FLOW VELOCITY(FEET/SEC.) =  4.28   DEPTH*VELOCITY(FT*FT/SEC.) =   2.80
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  319.6 FT WITH ELEVATION-DROP =   4.0 FT, IS   22.8 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  11224.00
  LONGEST FLOWPATH FROM NODE  11220.00 TO NODE  11224.00 =  1146.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011224.0 TO NODE LR011225.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1235.00  DOWNSTREAM ELEVATION(FEET) = 1230.00
  STREET LENGTH(FEET) =   327.08   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      68.59
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.66
    HALFSTREET FLOOD WIDTH(FEET) =   26.07
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.79
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.17
  STREET FLOW TRAVEL TIME(MIN.) =   1.14   Tc(MIN.) =  12.30
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.235
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        1.45      0.75      0.10    56
  COMMERCIAL                 A        4.60      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.32      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.93
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.13
  SUBAREA AREA(ACRES) =    6.37      SUBAREA RUNOFF(CFS) =   17.88
  EFFECTIVE AREA(ACRES) =     27.58    AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.88  AREA-AVERAGED Ap =  0.30
  TOTAL AREA(ACRES) =     27.58        PEAK FLOW RATE(CFS) =      73.82

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
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  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.68   HALFSTREET FLOOD WIDTH(FEET) =  26.86
  FLOW VELOCITY(FEET/SEC.) =  4.87   DEPTH*VELOCITY(FT*FT/SEC.) =   3.30
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  327.1 FT WITH ELEVATION-DROP =   5.0 FT, IS   25.1 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  11225.00
  LONGEST FLOWPATH FROM NODE  11220.00 TO NODE  11225.00 =  1474.01 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011225.0 TO NODE LR011226.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1230.00  DOWNSTREAM ELEVATION(FEET) = 1222.00
  STREET LENGTH(FEET) =   398.06   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      83.61
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.67
    HALFSTREET FLOOD WIDTH(FEET) =   26.74
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.56
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.75
  STREET FLOW TRAVEL TIME(MIN.) =   1.19   Tc(MIN.) =  13.49
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.060
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        3.44      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.04      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.34      0.75      0.60    56
  COMMERCIAL                 A        3.54      0.98      0.10    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.84
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.13
  SUBAREA AREA(ACRES) =    7.36      SUBAREA RUNOFF(CFS) =   19.57
  EFFECTIVE AREA(ACRES) =     34.94    AREA-AVERAGED Fm(INCH/HR) =  0.23
  AREA-AVERAGED Fp(INCH/HR) =  0.88  AREA-AVERAGED Ap =  0.26
  TOTAL AREA(ACRES) =     34.94        PEAK FLOW RATE(CFS) =      89.06

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.69   HALFSTREET FLOOD WIDTH(FEET) =  27.35
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  FLOW VELOCITY(FEET/SEC.) =  5.67   DEPTH*VELOCITY(FT*FT/SEC.) =   3.90
  LONGEST FLOWPATH FROM NODE  11220.00 TO NODE  11226.00 =  1872.07 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011226.0 TO NODE LR011227.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1222.00  DOWNSTREAM ELEVATION(FEET) = 1215.00
  STREET LENGTH(FEET) =   348.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      97.59
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.71
    HALFSTREET FLOOD WIDTH(FEET) =   28.39
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.79
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.10
  STREET FLOW TRAVEL TIME(MIN.) =   1.00   Tc(MIN.) =  14.49
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.932
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        5.47      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.35      0.75      0.60    56
  COMMERCIAL                 A        0.87      0.98      0.10    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.77
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.13
  SUBAREA AREA(ACRES) =    6.69      SUBAREA RUNOFF(CFS) =   17.06
  EFFECTIVE AREA(ACRES) =     41.63    AREA-AVERAGED Fm(INCH/HR) =  0.21
  AREA-AVERAGED Fp(INCH/HR) =  0.87  AREA-AVERAGED Ap =  0.24
  TOTAL AREA(ACRES) =     41.63        PEAK FLOW RATE(CFS) =     102.07

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.72   HALFSTREET FLOOD WIDTH(FEET) =  28.88
  FLOW VELOCITY(FEET/SEC.) =  5.86   DEPTH*VELOCITY(FT*FT/SEC.) =   4.21
  LONGEST FLOWPATH FROM NODE  11220.00 TO NODE  11227.00 =  2220.57 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011227.0 TO NODE LR011228.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
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  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1215.00  DOWNSTREAM ELEVATION(FEET) = 1209.00
  STREET LENGTH(FEET) =   284.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.89

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     106.85
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.72
    HALFSTREET FLOOD WIDTH(FEET) =   29.12
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.04
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.36
  STREET FLOW TRAVEL TIME(MIN.) =   0.78   Tc(MIN.) =  15.28
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.840
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.59      0.75      0.60    56
  COMMERCIAL                 B        3.33      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.18
  SUBAREA AREA(ACRES) =    3.92      SUBAREA RUNOFF(CFS) =    9.56
  EFFECTIVE AREA(ACRES) =     45.55    AREA-AVERAGED Fm(INCH/HR) =  0.20
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  0.23
  TOTAL AREA(ACRES) =     45.55        PEAK FLOW RATE(CFS) =     108.21

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.72   HALFSTREET FLOOD WIDTH(FEET) =  29.25
  FLOW VELOCITY(FEET/SEC.) =  6.07   DEPTH*VELOCITY(FT*FT/SEC.) =   4.40
  LONGEST FLOWPATH FROM NODE  11220.00 TO NODE  11228.00 =  2504.57 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011228.0 TO NODE LR011228.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.28
  RAINFALL INTENSITY(INCH/HR) =   2.84
  AREA-AVERAGED Fm(INCH/HR) =  0.20
  AREA-AVERAGED Fp(INCH/HR) =  0.86
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  AREA-AVERAGED Ap =  0.23
  EFFECTIVE STREAM AREA(ACRES) =    45.55
  TOTAL STREAM AREA(ACRES) =    45.55
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    108.21

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    279.01  29.47    1.915  0.83( 0.19) 0.23   159.8 LR011210.0
      1    265.22  36.54    1.683  0.82( 0.18) 0.22   178.2 LR011200.0
      2    108.21  15.28    2.840  0.86( 0.20) 0.23    45.5 LR011220.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    330.28  15.28    2.840  0.84( 0.19) 0.23   128.4 LR011220.0
      2    349.29  29.47    1.915  0.83( 0.19) 0.23   205.3 LR011210.0
      3    325.99  36.54    1.683  0.83( 0.18) 0.22   223.8 LR011200.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    349.29    Tc(MIN.) =    29.47
  EFFECTIVE AREA(ACRES) =   205.31   AREA-AVERAGED Fm(INCH/HR) =  0.19
  AREA-AVERAGED Fp(INCH/HR) =  0.83  AREA-AVERAGED Ap =  0.23
  TOTAL AREA(ACRES) =    223.75
  LONGEST FLOWPATH FROM NODE  11200.00 TO NODE  11228.00 =  5921.26 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011228.0 TO NODE LR011229.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1209.00  DOWNSTREAM ELEVATION(FEET) = 1208.00
  STREET LENGTH(FEET) =  1471.75   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     394.02
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.92
    HALFSTREET FLOOD WIDTH(FEET) =  101.68
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.12
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.07
  STREET FLOW TRAVEL TIME(MIN.) =  11.58   Tc(MIN.) =  41.04
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.570
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SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"5-7 DWELLINGS/ACRE"       B        4.31      0.75       0.50    56
COMMERCIAL                 B       62.16      0.75       0.10    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        0.96      0.75       0.60    56
COMMERCIAL                 A        0.07      0.98       0.10    32
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.13
SUBAREA AREA(ACRES) =   67.50      SUBAREA RUNOFF(CFS) =   89.34
EFFECTIVE AREA(ACRES) =    272.81    AREA-AVERAGED Fm(INCH/HR) =  0.17
AREA-AVERAGED Fp(INCH/HR) =  0.82  AREA-AVERAGED Ap =  0.20
TOTAL AREA(ACRES) =    291.25        PEAK FLOW RATE(CFS) =     349.29
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.84   HALFSTREET FLOOD WIDTH(FEET) =  97.65
FLOW VELOCITY(FEET/SEC.) =  2.06   DEPTH*VELOCITY(FT*FT/SEC.) =   3.78

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 1.07
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) = 114.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.89
PIPE-FLOW(CFS) =    346.75
PIPEFLOW TRAVEL TIME(MIN.) =   5.02    Tc(MIN.) =  34.49
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.743
SUBAREA AREA(ACRES) =   67.50      SUBAREA RUNOFF(CFS) =   99.84
TOTAL AREA(ACRES) =    291.25        PEAK FLOW RATE(CFS) =    386.82

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   40.06
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.96
  HALFSTREET FLOOD WIDTH(FEET) =   53.46
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.10
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.05
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
       AND L =  1471.8 FT WITH ELEVATION-DROP =   1.0 FT, IS  125.0 CFS,
       WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  11229.00

** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
    1    401.93  19.68    2.440  0.82( 0.16) 0.20   195.9 LR011220.0
    2    386.82  34.49    1.743  0.82( 0.17) 0.20   272.8 LR011210.0
    3    368.80  40.96    1.572  0.82( 0.16) 0.20   291.2 LR011200.0
NEW PEAK FLOW DATA ARE:
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  PEAK FLOW RATE(CFS) =    401.93  Tc(MIN.) =  19.68
  AREA-AVERAGED Fm(INCH/HR) =  0.16  AREA-AVERAGED Fp(INCH/HR) =  0.82
  AREA-AVERAGED Ap =  0.20  EFFECTIVE AREA(ACRES) =    195.88
  LONGEST FLOWPATH FROM NODE  11200.00 TO NODE  11229.00 =  7393.01 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011229.0 TO NODE LR011230.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1208.00  DOWNSTREAM ELEVATION(FEET) = 1200.00
  STREET LENGTH(FEET) =  1206.48   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     486.61
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.40
    HALFSTREET FLOOD WIDTH(FEET) =   75.80
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.17
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.25
  STREET FLOW TRAVEL TIME(MIN.) =   3.89   Tc(MIN.) =  23.57
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.190
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        8.11      0.75      0.50    56
  COMMERCIAL                 B       80.91      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.30      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.14
  SUBAREA AREA(ACRES) =   90.32      SUBAREA RUNOFF(CFS) =  169.28
  EFFECTIVE AREA(ACRES) =    286.20    AREA-AVERAGED Fm(INCH/HR) =  0.20
  AREA-AVERAGED Fp(INCH/HR) =  0.80  AREA-AVERAGED Ap =  0.25
  TOTAL AREA(ACRES) =    381.57        PEAK FLOW RATE(CFS) =     512.05

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.43   HALFSTREET FLOOD WIDTH(FEET) =  76.96
  FLOW VELOCITY(FEET/SEC.) =  5.24   DEPTH*VELOCITY(FT*FT/SEC.) =   7.48

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 1.07
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  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  75.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.55
  PIPE-FLOW(CFS) =    354.60
  PIPEFLOW TRAVEL TIME(MIN.) =   1.74    Tc(MIN.) =  21.43
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.319
  SUBAREA AREA(ACRES) =   90.32      SUBAREA RUNOFF(CFS) =  179.78
  TOTAL AREA(ACRES) =    381.57        PEAK FLOW RATE(CFS) =    545.32

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  190.72
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.06
    HALFSTREET FLOOD WIDTH(FEET) =   58.84
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.94
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.19
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  1206.5 FT WITH ELEVATION-DROP =   8.0 FT, IS  232.9 CFS,
         WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  11230.00

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    561.14  21.38    2.322  0.80( 0.14) 0.18   286.2 LR011220.0
      2    503.19  36.23    1.692  0.81( 0.15) 0.19   363.1 LR011210.0
      3    474.56  42.70    1.533  0.80( 0.15) 0.19   381.6 LR011200.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    561.14  Tc(MIN.) =  21.38
  AREA-AVERAGED Fm(INCH/HR) =  0.14  AREA-AVERAGED Fp(INCH/HR) =  0.80
  AREA-AVERAGED Ap =  0.18  EFFECTIVE AREA(ACRES) =    286.20
  LONGEST FLOWPATH FROM NODE  11200.00 TO NODE  11230.00 =  8599.49 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =    381.57  TC(MIN.) =     21.38
  EFFECTIVE AREA(ACRES) =    286.20  AREA-AVERAGED Fm(INCH/HR)=  0.20
  AREA-AVERAGED Fp(INCH/HR) =  0.80  AREA-AVERAGED Ap =  0.25
  PEAK FLOW RATE(CFS)   =    561.14

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    561.14  21.38    2.322  0.80( 0.14) 0.18   286.2 LR011220.0
      2    503.19  36.23    1.692  0.81( 0.15) 0.19   363.1 LR011210.0
      3    474.56  42.70    1.533  0.80( 0.15) 0.19   381.6 LR011200.0
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

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************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
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                        Analysis prepared by:

                          County of San Bernardino
                        Transportation Flood Control

                          Water Resources Division

------------------------------------------------------------------------
  FILE NAME: LR0113ZZ.Z13
  TIME/DATE OF STUDY: 11:45 11/16/2004
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.2500

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)     (n)
===  =====  ========  =================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
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    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


************************************************************************
  FLOW PROCESS FROM NODE LR011302.0 TO NODE LR011303.0 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   862.73
  ELEVATION DATA: UPSTREAM(FEET) =   1207.00  DOWNSTREAM(FEET) =   1205.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.282
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.840
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 B        6.38      0.75       0.10    56   15.28
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.60      0.75       0.60    56   20.71
  COMMERCIAL                 A        1.25      0.98       0.10    32   15.28
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.58      0.98       0.60    32   20.71
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.21
  SUBAREA RUNOFF(CFS) =     23.58
  TOTAL AREA(ACRES) =      9.81   PEAK FLOW RATE(CFS) =     23.58

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.39

************************************************************************
  FLOW PROCESS FROM NODE LR011303.0 TO NODE LR011304.0 IS CODE =  63
------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
========================================================================
  UPSTREAM ELEVATION(FEET) = 1205.00  DOWNSTREAM ELEVATION(FEET) = 1202.00
  STREET LENGTH(FEET) =   394.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
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OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      45.79
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.65
  HALFSTREET FLOOD WIDTH(FEET) =   25.52
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.33
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.16
STREET FLOW TRAVEL TIME(MIN.) =   1.97   Tc(MIN.) =  17.26
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.640
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
COMMERCIAL                 B       16.73      0.75      0.10    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        0.71      0.75      0.60    56
COMMERCIAL                 A        1.91      0.98      0.10    32
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.77
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.12
SUBAREA AREA(ACRES) =   19.35      SUBAREA RUNOFF(CFS) =   44.40
EFFECTIVE AREA(ACRES) =     29.16    AREA-AVERAGED Fm(INCH/HR) =  0.12
AREA-AVERAGED Fp(INCH/HR) =  0.78  AREA-AVERAGED Ap =  0.15
TOTAL AREA(ACRES) =     29.16        PEAK FLOW RATE(CFS) =      66.22

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.39

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.73   HALFSTREET FLOOD WIDTH(FEET) =  29.49
FLOW VELOCITY(FEET/SEC.) =  3.65   DEPTH*VELOCITY(FT*FT/SEC.) =   2.67

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.70
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =   5.79
PIPE-FLOW(CFS) =     18.20
PIPEFLOW TRAVEL TIME(MIN.) =   1.13    Tc(MIN.) =  16.42
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.720
SUBAREA AREA(ACRES) =   19.35      SUBAREA RUNOFF(CFS) =   45.79
TOTAL AREA(ACRES) =     29.16        PEAK FLOW RATE(CFS) =     68.32

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.39
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   50.12
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.67
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  HALFSTREET FLOOD WIDTH(FEET) =   26.44
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.41
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.28
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
       AND L =   394.0 FT WITH ELEVATION-DROP =   3.0 FT, IS   67.3 CFS,
       WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  11304.00
LONGEST FLOWPATH FROM NODE  11302.00 TO NODE  11304.00 =  1256.73 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR011304.0 TO NODE LR011305.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1202.00  DOWNSTREAM ELEVATION(FEET) = 1190.00
 STREET LENGTH(FEET) =   882.18   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     114.34
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.79
  HALFSTREET FLOOD WIDTH(FEET) =   32.60
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.20
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.12
 STREET FLOW TRAVEL TIME(MIN.) =   2.83   Tc(MIN.) =  19.24
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.473
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 B       40.46      0.75      0.10    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        2.53      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.13
 SUBAREA AREA(ACRES) =   42.99      SUBAREA RUNOFF(CFS) =   91.94
 EFFECTIVE AREA(ACRES) =     72.15    AREA-AVERAGED Fm(INCH/HR) =  0.10
 AREA-AVERAGED Fp(INCH/HR) =  0.76  AREA-AVERAGED Ap =  0.14
 TOTAL AREA(ACRES) =     72.15        PEAK FLOW RATE(CFS) =     153.76

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.39

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.87   HALFSTREET FLOOD WIDTH(FEET) =  36.63
 FLOW VELOCITY(FEET/SEC.) =  5.58   DEPTH*VELOCITY(FT*FT/SEC.) =   4.87

 *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
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       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.70
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  28.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.55
  PIPE-FLOW(CFS) =     68.32
  PIPEFLOW TRAVEL TIME(MIN.) =   1.27    Tc(MIN.) =  17.69
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.601
  SUBAREA AREA(ACRES) =   42.99      SUBAREA RUNOFF(CFS) =   96.89
  TOTAL AREA(ACRES) =     72.15        PEAK FLOW RATE(CFS) =    162.09

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.39
  *NOTE: STREET-CAPACITY MAY BE EXCEEDED*
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   93.77
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.74
    HALFSTREET FLOOD WIDTH(FEET) =   30.16
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.95
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.68
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =   882.2 FT WITH ELEVATION-DROP =  12.0 FT, IS  131.4 CFS,
         WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  11305.00
  LONGEST FLOWPATH FROM NODE  11302.00 TO NODE  11305.00 =  2138.91 FEET.

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  FLOW PROCESS FROM NODE LR011305.0 TO NODE LR011306.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1190.00  DOWNSTREAM ELEVATION(FEET) = 1176.00
  STREET LENGTH(FEET) =  1136.87   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     212.85
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.99
    HALFSTREET FLOOD WIDTH(FEET) =   42.49
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.78
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.72
  STREET FLOW TRAVEL TIME(MIN.) =   3.28   Tc(MIN.) =  20.97
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.349
  SUBAREA LOSS RATE DATA(AMC  II):
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   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                B       47.35      0.75       0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"      B        2.67      0.75       0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.13
  SUBAREA AREA(ACRES) =   50.02      SUBAREA RUNOFF(CFS) =  101.47
  EFFECTIVE AREA(ACRES) =    122.17    AREA-AVERAGED Fm(INCH/HR) =  0.10
  AREA-AVERAGED Fp(INCH/HR) =  0.76  AREA-AVERAGED Ap =  0.13
  TOTAL AREA(ACRES) =    122.17        PEAK FLOW RATE(CFS) =     247.17

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.39

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.04   HALFSTREET FLOOD WIDTH(FEET) =  45.05
  FLOW VELOCITY(FEET/SEC.) =  5.98   DEPTH*VELOCITY(FT*FT/SEC.) =   6.23

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.70
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  51.0 INCH PIPE IS  39.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.84
  PIPE-FLOW(CFS) =    162.09
  PIPEFLOW TRAVEL TIME(MIN.) =   1.37    Tc(MIN.) =  19.06
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.487
  SUBAREA AREA(ACRES) =   50.02      SUBAREA RUNOFF(CFS) =  107.71
  TOTAL AREA(ACRES) =    122.17        PEAK FLOW RATE(CFS) =    262.41

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.39
  *NOTE: STREET-CAPACITY MAY BE EXCEEDED*
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  100.32
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.77
    HALFSTREET FLOOD WIDTH(FEET) =   31.56
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.86
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.75
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  1136.9 FT WITH ELEVATION-DROP =  14.0 FT, IS  141.9 CFS,
         WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  11306.00
  LONGEST FLOWPATH FROM NODE  11302.00 TO NODE  11306.00 =  3275.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011306.0 TO NODE LR011316.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1176.00  DOWNSTREAM ELEVATION(FEET) = 1175.00
  STREET LENGTH(FEET) =  1316.52   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00
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DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     268.52
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  1.76
  HALFSTREET FLOOD WIDTH(FEET) =   80.76
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.05
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.59
STREET FLOW TRAVEL TIME(MIN.) =  10.72   Tc(MIN.) =  29.78
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.903
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        1.13      0.75      0.60    56
COMMERCIAL                 B        6.52      0.75      0.10    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.17
SUBAREA AREA(ACRES) =    7.65      SUBAREA RUNOFF(CFS) =   12.21
EFFECTIVE AREA(ACRES) =    129.82    AREA-AVERAGED Fm(INCH/HR) =  0.10
AREA-AVERAGED Fp(INCH/HR) =  0.76  AREA-AVERAGED Ap =  0.14
TOTAL AREA(ACRES) =    129.82        PEAK FLOW RATE(CFS) =     262.41
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.39

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.74   HALFSTREET FLOOD WIDTH(FEET) =  80.03
FLOW VELOCITY(FEET/SEC.) =  2.04   DEPTH*VELOCITY(FT*FT/SEC.) =   3.55

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.70
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) = 102.00    NUMBER OF PIPES =   1
DEPTH OF FLOW IN 102.0 INCH PIPE IS  80.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   5.47
PIPE-FLOW(CFS) =    262.41
PIPEFLOW TRAVEL TIME(MIN.) =   4.01    Tc(MIN.) =  23.07
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.218
SUBAREA AREA(ACRES) =    7.65      SUBAREA RUNOFF(CFS) =   14.38
TOTAL AREA(ACRES) =    129.82        PEAK FLOW RATE(CFS) =    262.41
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.39

*NOTE: ESTIMATED PEAK FLOW DEFAULTED TO UPSTREAM PEAK FLOW;
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       STREET HYDRAULICS NOT COMPUTED*
  LONGEST FLOWPATH FROM NODE  11302.00 TO NODE  11316.00 =  4592.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011316.0 TO NODE LR011316.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  23.07
  RAINFALL INTENSITY(INCH/HR) =   2.22
  AREA-AVERAGED Fm(INCH/HR) =  0.10
  AREA-AVERAGED Fp(INCH/HR) =  0.76
  AREA-AVERAGED Ap =  0.14
  EFFECTIVE STREAM AREA(ACRES) =   129.82
  TOTAL STREAM AREA(ACRES) =   129.82
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    262.41

****************************************************************************
  FLOW PROCESS FROM NODE LR011310.0 TO NODE LR011311.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   877.57
  ELEVATION DATA: UPSTREAM(FEET) =   1212.50  DOWNSTREAM(FEET) =   1212.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   20.373
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.390
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 B        4.70      0.75      0.10    56   20.37
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.21      0.75      0.60    56   27.61
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.12
  SUBAREA RUNOFF(CFS) =     10.16
  TOTAL AREA(ACRES) =      4.91   PEAK FLOW RATE(CFS) =     10.16

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR011311.0 TO NODE LR011312.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1212.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1211.50
  CHANNEL LENGTH THRU SUBAREA(FEET) =   581.61
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.953
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  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.82      0.75      0.60    56
  COMMERCIAL                 B        4.89      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.17
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     14.86
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.19
  AVERAGE FLOW DEPTH(FEET) =   0.77   FLOOD WIDTH(FEET) =   52.81
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   8.15   Tc(MIN.) =  28.52
  SUBAREA AREA(ACRES) =    5.71       SUBAREA RUNOFF(CFS) =    9.38
  EFFECTIVE AREA(ACRES) =   10.62     AREA-AVERAGED Fm(INCH/HR) =   0.11
  AREA-AVERAGED Fp(INCH/HR) =   0.75  AREA-AVERAGED Ap =   0.15
  TOTAL AREA(ACRES) =     10.62         PEAK FLOW RATE(CFS) =      17.60

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.81   FLOOD WIDTH(FEET) =   56.69
  FLOW VELOCITY(FEET/SEC.) =   1.23   DEPTH*VELOCITY(FT*FT/SEC) =   0.99
  LONGEST FLOWPATH FROM NODE  11310.00 TO NODE  11312.00 =  1459.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011312.0 TO NODE LR011313.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1211.50  DOWNSTREAM ELEVATION(FEET) = 1210.00
  STREET LENGTH(FEET) =   302.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      28.54
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.65
    HALFSTREET FLOOD WIDTH(FEET) =   24.62
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.28
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.49
  STREET FLOW TRAVEL TIME(MIN.) =   2.21   Tc(MIN.) =  30.73
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.867
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       13.21      0.75      0.10    56
  RESIDENTIAL
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  "3-4 DWELLINGS/ACRE"       B        0.43      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.12
  SUBAREA AREA(ACRES) =   13.64      SUBAREA RUNOFF(CFS) =   21.86
  EFFECTIVE AREA(ACRES) =     24.26    AREA-AVERAGED Fm(INCH/HR) =  0.10
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.13
  TOTAL AREA(ACRES) =     24.26        PEAK FLOW RATE(CFS) =      38.65

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.71   HALFSTREET FLOOD WIDTH(FEET) =  29.91
  FLOW VELOCITY(FEET/SEC.) =  2.45   DEPTH*VELOCITY(FT*FT/SEC.) =   1.74
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  302.5 FT WITH ELEVATION-DROP =   1.5 FT, IS   48.1 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  11313.00
  LONGEST FLOWPATH FROM NODE  11310.00 TO NODE  11313.00 =  1761.68 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011313.0 TO NODE LR011314.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1210.00  DOWNSTREAM ELEVATION(FEET) = 1200.00
  STREET LENGTH(FEET) =   564.52   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.99

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      60.33
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.67
    HALFSTREET FLOOD WIDTH(FEET) =   26.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.44
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.98
  STREET FLOW TRAVEL TIME(MIN.) =   2.12   Tc(MIN.) =  32.85
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.794
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       27.36      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.83      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.11
  SUBAREA AREA(ACRES) =   28.19      SUBAREA RUNOFF(CFS) =   43.34
  EFFECTIVE AREA(ACRES) =     52.45    AREA-AVERAGED Fm(INCH/HR) =  0.09
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.12
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  TOTAL AREA(ACRES) =     52.45        PEAK FLOW RATE(CFS) =      80.39

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.73   HALFSTREET FLOOD WIDTH(FEET) =  31.94
  FLOW VELOCITY(FEET/SEC.) =  4.72   DEPTH*VELOCITY(FT*FT/SEC.) =   3.45
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  564.5 FT WITH ELEVATION-DROP =  10.0 FT, IS   99.6 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  11314.00
  LONGEST FLOWPATH FROM NODE  11310.00 TO NODE  11314.00 =  2326.20 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011314.0 TO NODE LR011315.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1200.00  DOWNSTREAM ELEVATION(FEET) = 1185.00
  STREET LENGTH(FEET) =   751.01   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.96

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     110.18
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.79
    HALFSTREET FLOOD WIDTH(FEET) =   37.56
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.26
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.14
  STREET FLOW TRAVEL TIME(MIN.) =   2.38   Tc(MIN.) =  35.23
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.720
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  SCHOOL                     B        8.18      0.75      0.60    56
  COMMERCIAL                 B       33.04      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.12      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.21
  SUBAREA AREA(ACRES) =   42.34      SUBAREA RUNOFF(CFS) =   59.58
  EFFECTIVE AREA(ACRES) =     94.79    AREA-AVERAGED Fm(INCH/HR) =  0.12
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.16
  TOTAL AREA(ACRES) =     94.79        PEAK FLOW RATE(CFS) =     136.49

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
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  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.83   HALFSTREET FLOOD WIDTH(FEET) =  40.26
  FLOW VELOCITY(FEET/SEC.) =  5.60   DEPTH*VELOCITY(FT*FT/SEC.) =   4.66
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  751.0 FT WITH ELEVATION-DROP =  15.0 FT, IS  138.9 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  11315.00
  LONGEST FLOWPATH FROM NODE  11310.00 TO NODE  11315.00 =  3077.21 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011315.0 TO NODE LR011316.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1185.00  DOWNSTREAM ELEVATION(FEET) = 1175.00
  STREET LENGTH(FEET) =   753.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     141.28
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.88
    HALFSTREET FLOOD WIDTH(FEET) =   42.88
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.92
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.35
  STREET FLOW TRAVEL TIME(MIN.) =   2.55   Tc(MIN.) =  37.79
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.650
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.03      0.75      0.60    56
  COMMERCIAL                 B        5.97      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.17
  SUBAREA AREA(ACRES) =    7.00      SUBAREA RUNOFF(CFS) =    9.58
  EFFECTIVE AREA(ACRES) =    101.79    AREA-AVERAGED Fm(INCH/HR) =  0.12
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.16
  TOTAL AREA(ACRES) =    101.79        PEAK FLOW RATE(CFS) =     140.03

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.88   HALFSTREET FLOOD WIDTH(FEET) =  42.76
  FLOW VELOCITY(FEET/SEC.) =  4.91   DEPTH*VELOCITY(FT*FT/SEC.) =   4.33

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
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       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.87
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.64
  PIPE-FLOW(CFS) =     24.02
  PIPEFLOW TRAVEL TIME(MIN.) =   1.64    Tc(MIN.) =  36.88
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.674
  SUBAREA AREA(ACRES) =    7.00      SUBAREA RUNOFF(CFS) =    9.73
  TOTAL AREA(ACRES) =    101.79        PEAK FLOW RATE(CFS) =    142.26

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  118.23
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.84
    HALFSTREET FLOOD WIDTH(FEET) =   40.87
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.66
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.93
  LONGEST FLOWPATH FROM NODE  11310.00 TO NODE  11316.00 =  3830.71 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011316.0 TO NODE LR011316.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  36.88
  RAINFALL INTENSITY(INCH/HR) =   1.67
  AREA-AVERAGED Fm(INCH/HR) =  0.12
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.16
  EFFECTIVE STREAM AREA(ACRES) =   101.79
  TOTAL STREAM AREA(ACRES) =   101.79
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    142.26

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    262.41  23.07    2.218  0.76( 0.10) 0.14   129.8 LR011302.0
      2    142.26  36.88    1.674  0.75( 0.12) 0.16   101.8 LR011310.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    382.59  23.07    2.218  0.75( 0.11) 0.14   193.5 LR011302.0
      2    337.19  36.88    1.674  0.75( 0.11) 0.15   231.6 LR011310.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    382.59    Tc(MIN.) =    23.07
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  EFFECTIVE AREA(ACRES) =   193.51   AREA-AVERAGED Fm(INCH/HR) =  0.11
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.14
  TOTAL AREA(ACRES) =    231.61
  LONGEST FLOWPATH FROM NODE  11302.00 TO NODE  11316.00 =  4592.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011316.0 TO NODE LR011317.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1175.00  DOWNSTREAM ELEVATION(FEET) = 1160.00
  STREET LENGTH(FEET) =  1841.80   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     408.37
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.30
    HALFSTREET FLOOD WIDTH(FEET) =   63.82
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.56
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.25
  STREET FLOW TRAVEL TIME(MIN.) =   5.52   Tc(MIN.) =  28.59
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.950
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  SCHOOL                     B        9.92      0.75       0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.74      0.75       0.60    56
  COMMERCIAL                 B       21.20      0.75       0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.28
  SUBAREA AREA(ACRES) =   32.86      SUBAREA RUNOFF(CFS) =   51.54
  EFFECTIVE AREA(ACRES) =    226.37    AREA-AVERAGED Fm(INCH/HR) =  0.12
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.16
  TOTAL AREA(ACRES) =    264.47        PEAK FLOW RATE(CFS) =     382.59
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.28   HALFSTREET FLOOD WIDTH(FEET) =  62.47
  FLOW VELOCITY(FEET/SEC.) =  5.46   DEPTH*VELOCITY(FT*FT/SEC.) =   6.97

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.87
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  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  69.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.11
  PIPE-FLOW(CFS) =    314.63
  PIPEFLOW TRAVEL TIME(MIN.) =   2.54    Tc(MIN.) =  25.61
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.083
  SUBAREA AREA(ACRES) =   32.86      SUBAREA RUNOFF(CFS) =   55.48
  TOTAL AREA(ACRES) =    264.47        PEAK FLOW RATE(CFS) =    399.40

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   84.76
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.83
    HALFSTREET FLOOD WIDTH(FEET) =   39.95
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.55
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.93

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    399.40  25.61    2.083  0.75( 0.12) 0.16   226.4 LR011302.0
      2    353.65  39.41    1.609  0.75( 0.12) 0.16   264.5 LR011310.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    399.40  Tc(MIN.) =  25.61
  AREA-AVERAGED Fm(INCH/HR) =  0.12  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.16  EFFECTIVE AREA(ACRES) =    226.37
  LONGEST FLOWPATH FROM NODE  11302.00 TO NODE  11317.00 =  6434.10 FEET.
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =    264.47  TC(MIN.) =     25.61
  EFFECTIVE AREA(ACRES) =    226.37  AREA-AVERAGED Fm(INCH/HR)=  0.12
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.16
  PEAK FLOW RATE(CFS)   =    399.40

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    399.40  25.61    2.083  0.75( 0.12) 0.16   226.4 LR011302.0
      2    353.65  39.41    1.609  0.75( 0.12) 0.16   264.5 LR011310.0
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================================================================================
  END OF RATIONAL METHOD ANALYSIS
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            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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                          Analysis prepared by:

                           County of San Bernardino
                         Transportation Flood Control

                           Water Resources Division

--------------------------------------------------------------------------
  FILE NAME: LR0114ZZ.Z13
  TIME/DATE OF STUDY: 13:12 11/15/2004
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.2500

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)     (n)
===  =====  ========  =================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
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    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


**************************************************************************
  FLOW PROCESS FROM NODE LR011400.0 TO NODE LR011401.0 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   884.64
  ELEVATION DATA: UPSTREAM(FEET) =   1210.00  DOWNSTREAM(FEET) =   1208.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.514
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.814
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.99      0.75       0.60    56   21.03
  COMMERCIAL                 B        5.80      0.75       0.10    56   15.51
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.17
  SUBAREA RUNOFF(CFS) =     16.41
  TOTAL AREA(ACRES) =      6.79   PEAK FLOW RATE(CFS) =     16.41

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.39

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  FLOW PROCESS FROM NODE LR011401.0 TO NODE LR011402.0 IS CODE =  63
--------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
==========================================================================
  UPSTREAM ELEVATION(FEET) = 1208.00  DOWNSTREAM ELEVATION(FEET) = 1206.00
  STREET LENGTH(FEET) =   156.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
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  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      22.43
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.50
    HALFSTREET FLOOD WIDTH(FEET) =   18.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.13
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.56
  STREET FLOW TRAVEL TIME(MIN.) =   0.83   Tc(MIN.) =  16.35
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.727
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        4.86      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.22      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.12
  SUBAREA AREA(ACRES) =    5.08      SUBAREA RUNOFF(CFS) =   12.05
  EFFECTIVE AREA(ACRES) =     11.87    AREA-AVERAGED Fm(INCH/HR) =  0.11
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.15
  TOTAL AREA(ACRES) =     11.87        PEAK FLOW RATE(CFS) =      27.93

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.89; 24HR = 3.37

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.53   HALFSTREET FLOOD WIDTH(FEET) =  19.36
  FLOW VELOCITY(FEET/SEC.) =  3.40   DEPTH*VELOCITY(FT*FT/SEC.) =   1.79
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  156.5 FT WITH ELEVATION-DROP =   2.0 FT, IS   23.6 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  11402.00
  LONGEST FLOWPATH FROM NODE  11400.00 TO NODE  11402.00 =  1041.14 FEET.

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  FLOW PROCESS FROM NODE LR011402.0 TO NODE LR011403.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1206.00  DOWNSTREAM ELEVATION(FEET) = 1202.00
  STREET LENGTH(FEET) =   419.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70
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    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      41.10
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.61
    HALFSTREET FLOOD WIDTH(FEET) =   23.51
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.49
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.13
  STREET FLOW TRAVEL TIME(MIN.) =   2.00   Tc(MIN.) =  18.35
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.544
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       11.37      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.56      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.12
  SUBAREA AREA(ACRES) =   11.93      SUBAREA RUNOFF(CFS) =   26.33
  EFFECTIVE AREA(ACRES) =     23.80    AREA-AVERAGED Fm(INCH/HR) =  0.10
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.14
  TOTAL AREA(ACRES) =     23.80        PEAK FLOW RATE(CFS) =      52.30

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.37; 6HR = 1.85; 24HR = 3.28

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.66   HALFSTREET FLOOD WIDTH(FEET) =  25.77
  FLOW VELOCITY(FEET/SEC.) =  3.73   DEPTH*VELOCITY(FT*FT/SEC.) =   2.45
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  419.5 FT WITH ELEVATION-DROP =   4.0 FT, IS   42.0 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  11403.00
  LONGEST FLOWPATH FROM NODE  11400.00 TO NODE  11403.00 =  1460.64 FEET.

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  FLOW PROCESS FROM NODE LR011403.0 TO NODE LR011404.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1202.00  DOWNSTREAM ELEVATION(FEET) = 1193.00
  STREET LENGTH(FEET) =   817.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      76.40
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.72
    HALFSTREET FLOOD WIDTH(FEET) =   29.00
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  AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.35
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.13
STREET FLOW TRAVEL TIME(MIN.) =   3.13   Tc(MIN.) =  21.48
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.315
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
COMMERCIAL                 B       22.97      0.75      0.10    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        1.11      0.75      0.60    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.12
SUBAREA AREA(ACRES) =   24.08      SUBAREA RUNOFF(CFS) =   48.18
EFFECTIVE AREA(ACRES) =     47.88    AREA-AVERAGED Fm(INCH/HR) =  0.10
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.13
TOTAL AREA(ACRES) =     47.88        PEAK FLOW RATE(CFS) =      95.57

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.33; 6HR = 1.76; 24HR = 3.15

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.77   HALFSTREET FLOOD WIDTH(FEET) =  31.63
FLOW VELOCITY(FEET/SEC.) =  4.61   DEPTH*VELOCITY(FT*FT/SEC.) =   3.56

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.70
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =   7.53
PIPE-FLOW(CFS) =     29.97
PIPEFLOW TRAVEL TIME(MIN.) =   1.81    Tc(MIN.) =  20.16
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.405
SUBAREA AREA(ACRES) =   24.08      SUBAREA RUNOFF(CFS) =   50.12
TOTAL AREA(ACRES) =     47.88        PEAK FLOW RATE(CFS) =     99.44

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.33; 6HR = 1.76; 24HR = 3.15
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   69.47
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.70
  HALFSTREET FLOOD WIDTH(FEET) =   27.96
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.24
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.97
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
       AND L =   817.0 FT WITH ELEVATION-DROP =   9.0 FT, IS   73.2 CFS,
       WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  11404.00
LONGEST FLOWPATH FROM NODE  11400.00 TO NODE  11404.00 =  2277.64 FEET.

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  FLOW PROCESS FROM NODE LR011404.0 TO NODE LR011405.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
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UPSTREAM ELEVATION(FEET) = 1193.00  DOWNSTREAM ELEVATION(FEET) = 1178.00
STREET LENGTH(FEET) =  1414.50   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     136.80
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.88
  HALFSTREET FLOOD WIDTH(FEET) =   36.75
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.93
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.31
STREET FLOW TRAVEL TIME(MIN.) =   4.78   Tc(MIN.) =  24.94
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.117
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
COMMERCIAL                 B       37.11      0.75      0.10    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        4.28      0.75      0.60    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.15
SUBAREA AREA(ACRES) =   41.39      SUBAREA RUNOFF(CFS) =   74.62
EFFECTIVE AREA(ACRES) =     89.27    AREA-AVERAGED Fm(INCH/HR) =  0.10
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.14
TOTAL AREA(ACRES) =     89.27        PEAK FLOW RATE(CFS) =     161.63

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.58; 24HR = 3.08

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.93   HALFSTREET FLOOD WIDTH(FEET) =  39.25
FLOW VELOCITY(FEET/SEC.) =  5.12   DEPTH*VELOCITY(FT*FT/SEC.) =   4.74

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.70
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
DEPTH OF FLOW IN  45.0 INCH PIPE IS  32.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  11.70
PIPE-FLOW(CFS) =     99.44
PIPEFLOW TRAVEL TIME(MIN.) =   2.01    Tc(MIN.) =  22.18
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.271
SUBAREA AREA(ACRES) =   41.39      SUBAREA RUNOFF(CFS) =   80.38
TOTAL AREA(ACRES) =     89.27        PEAK FLOW RATE(CFS) =    174.06

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.58; 24HR = 3.08
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  *NOTE: STREET-CAPACITY MAY BE EXCEEDED*
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   74.62
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.72
    HALFSTREET FLOOD WIDTH(FEET) =   28.94
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.27
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.07
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  1414.5 FT WITH ELEVATION-DROP =  15.0 FT, IS  108.5 CFS,
         WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  11405.00
  LONGEST FLOWPATH FROM NODE  11400.00 TO NODE  11405.00 =  3692.14 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011405.0 TO NODE LR011406.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1178.00  DOWNSTREAM ELEVATION(FEET) = 1141.00
  STREET LENGTH(FEET) =  2238.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     218.17
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.95
    HALFSTREET FLOOD WIDTH(FEET) =   40.48
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.51
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.18
  STREET FLOW TRAVEL TIME(MIN.) =   5.73   Tc(MIN.) =  27.90
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.979
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       48.37      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.81      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.14
  SUBAREA AREA(ACRES) =   52.18      SUBAREA RUNOFF(CFS) =   88.13
  EFFECTIVE AREA(ACRES) =    141.45    AREA-AVERAGED Fm(INCH/HR) =  0.10
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.14
  TOTAL AREA(ACRES) =    141.45        PEAK FLOW RATE(CFS) =     238.69

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 3.08
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  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.98   HALFSTREET FLOOD WIDTH(FEET) =  41.94
  FLOW VELOCITY(FEET/SEC.) =  6.65   DEPTH*VELOCITY(FT*FT/SEC.) =   6.51

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.70
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  51.0 INCH PIPE IS  36.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.89
  PIPE-FLOW(CFS) =    174.06
  PIPEFLOW TRAVEL TIME(MIN.) =   2.35    Tc(MIN.) =  24.52
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.138
  SUBAREA AREA(ACRES) =   52.18      SUBAREA RUNOFF(CFS) =   95.62
  TOTAL AREA(ACRES) =    141.45        PEAK FLOW RATE(CFS) =    258.99

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 3.08
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   84.93
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.70
    HALFSTREET FLOOD WIDTH(FEET) =   27.90
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.21
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.64
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  2238.5 FT WITH ELEVATION-DROP =  37.0 FT, IS  129.5 CFS,
         WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  11406.00
  LONGEST FLOWPATH FROM NODE  11400.00 TO NODE  11406.00 =  5930.64 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011406.0 TO NODE LR011416.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1141.00  DOWNSTREAM ELEVATION(FEET) = 1140.00
  STREET LENGTH(FEET) =  1299.52   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     263.88
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.63
    HALFSTREET FLOOD WIDTH(FEET) =   87.40
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  AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.00
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.27
STREET FLOW TRAVEL TIME(MIN.) =  10.83   Tc(MIN.) =  35.36
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.717
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        1.56      0.75      0.60    56
COMMERCIAL                 B        5.41      0.75      0.10    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.21
SUBAREA AREA(ACRES) =    6.97      SUBAREA RUNOFF(CFS) =    9.78
EFFECTIVE AREA(ACRES) =    148.42    AREA-AVERAGED Fm(INCH/HR) =  0.11
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.14
TOTAL AREA(ACRES) =    148.42        PEAK FLOW RATE(CFS) =     258.99
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 3.24

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.62   HALFSTREET FLOOD WIDTH(FEET) =  86.91
FLOW VELOCITY(FEET/SEC.) =  1.99   DEPTH*VELOCITY(FT*FT/SEC.) =   3.23

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.87
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  96.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.64
PIPE-FLOW(CFS) =    233.34
PIPEFLOW TRAVEL TIME(MIN.) =   4.67    Tc(MIN.) =  29.19
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.926
SUBAREA AREA(ACRES) =    6.97      SUBAREA RUNOFF(CFS) =   11.09
TOTAL AREA(ACRES) =    148.42        PEAK FLOW RATE(CFS) =    258.99
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 3.24
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   25.64
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.83
  HALFSTREET FLOOD WIDTH(FEET) =   41.56
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.06
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.88
LONGEST FLOWPATH FROM NODE  11400.00 TO NODE  11416.00 =  7230.16 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR011416.0 TO NODE LR011416.0 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  29.19
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 RAINFALL INTENSITY(INCH/HR) =   1.93
 AREA-AVERAGED Fm(INCH/HR) =  0.11
 AREA-AVERAGED Fp(INCH/HR) =  0.75
 AREA-AVERAGED Ap =  0.14
 EFFECTIVE STREAM AREA(ACRES) =   148.42
 TOTAL STREAM AREA(ACRES) =   148.42
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    258.99

****************************************************************************
 FLOW PROCESS FROM NODE LR011410.0 TO NODE LR011411.0 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   735.08
 ELEVATION DATA: UPSTREAM(FEET) =   1208.00  DOWNSTREAM(FEET) =   1207.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.947
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.768
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.04      0.75      0.60    56   21.61
 COMMERCIAL                 B        3.02      0.75      0.10    56   15.95
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.23
 SUBAREA RUNOFF(CFS) =      9.49
 TOTAL AREA(ACRES) =      4.06   PEAK FLOW RATE(CFS) =      9.49

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.39

****************************************************************************
 FLOW PROCESS FROM NODE LR011411.0 TO NODE LR011412.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1207.00  DOWNSTREAM ELEVATION(FEET) = 1205.00
 STREET LENGTH(FEET) =   156.00   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 39.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      12.72
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.45
   HALFSTREET FLOOD WIDTH(FEET) =   14.72
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    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.70
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.22
  STREET FLOW TRAVEL TIME(MIN.) =   0.96   Tc(MIN.) =  16.91
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.673
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                  B        2.68      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.10      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.12
  SUBAREA AREA(ACRES) =    2.78      SUBAREA RUNOFF(CFS) =    6.47
  EFFECTIVE AREA(ACRES) =      6.84    AREA-AVERAGED Fm(INCH/HR) =  0.14
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.18
  TOTAL AREA(ACRES) =      6.84        PEAK FLOW RATE(CFS) =      15.61

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.39

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.48   HALFSTREET FLOOD WIDTH(FEET) =  16.04
  FLOW VELOCITY(FEET/SEC.) =  2.82   DEPTH*VELOCITY(FT*FT/SEC.) =   1.35
  LONGEST FLOWPATH FROM NODE  11410.00 TO NODE  11412.00 =   891.08 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011412.0 TO NODE LR011413.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1205.00  DOWNSTREAM ELEVATION(FEET) = 1200.00
  STREET LENGTH(FEET) =   426.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      23.24
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.54
    HALFSTREET FLOOD WIDTH(FEET) =   19.12
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.02
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.63
  STREET FLOW TRAVEL TIME(MIN.) =   2.35   Tc(MIN.) =  19.26
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.472
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                  B        6.67      0.75      0.10    56
  RESIDENTIAL
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  "3-4 DWELLINGS/ACRE"        B        0.48      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.13
  SUBAREA AREA(ACRES) =    7.15      SUBAREA RUNOFF(CFS) =   15.26
  EFFECTIVE AREA(ACRES) =     13.99    AREA-AVERAGED Fm(INCH/HR) =  0.12
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.16
  TOTAL AREA(ACRES) =     13.99        PEAK FLOW RATE(CFS) =      29.63

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.39

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.58   HALFSTREET FLOOD WIDTH(FEET) =  21.07
  FLOW VELOCITY(FEET/SEC.) =  3.20   DEPTH*VELOCITY(FT*FT/SEC.) =   1.86
  LONGEST FLOWPATH FROM NODE  11410.00 TO NODE  11413.00 =  1317.58 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011413.0 TO NODE LR011414.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1200.00  DOWNSTREAM ELEVATION(FEET) = 1190.00
  STREET LENGTH(FEET) =   803.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      42.82
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.64
    HALFSTREET FLOOD WIDTH(FEET) =   24.12
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.56
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.28
  STREET FLOW TRAVEL TIME(MIN.) =   3.75   Tc(MIN.) =  23.02
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.221
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                  B       12.79      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        1.03      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.14
  SUBAREA AREA(ACRES) =   13.82      SUBAREA RUNOFF(CFS) =   26.35
  EFFECTIVE AREA(ACRES) =     27.81    AREA-AVERAGED Fm(INCH/HR) =  0.11
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.15
  TOTAL AREA(ACRES) =     27.81        PEAK FLOW RATE(CFS) =      52.83

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
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  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.38; 6HR = 1.88; 24HR = 3.39

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.68   HALFSTREET FLOOD WIDTH(FEET) =  26.88
  FLOW VELOCITY(FEET/SEC.) =  3.76   DEPTH*VELOCITY(FT*FT/SEC.) =   2.56
  LONGEST FLOWPATH FROM NODE  11410.00 TO NODE  11414.00 =  2120.58 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011414.0 TO NODE LR011415.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1190.00  DOWNSTREAM ELEVATION(FEET) = 1175.00
  STREET LENGTH(FEET) =  1393.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      77.86
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.78
    HALFSTREET FLOOD WIDTH(FEET) =   36.72
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.83
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.99
  STREET FLOW TRAVEL TIME(MIN.) =   6.06   Tc(MIN.) =  29.08
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.931
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       27.49      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.05      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.15
  SUBAREA AREA(ACRES) =   30.54      SUBAREA RUNOFF(CFS) =   49.98
  EFFECTIVE AREA(ACRES) =     58.35    AREA-AVERAGED Fm(INCH/HR) =  0.11
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.15
  TOTAL AREA(ACRES) =     58.35        PEAK FLOW RATE(CFS) =      95.54

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.29; 6HR = 1.67; 24HR = 3.25

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.83   HALFSTREET FLOOD WIDTH(FEET) =  41.41
  FLOW VELOCITY(FEET/SEC.) =  3.98   DEPTH*VELOCITY(FT*FT/SEC.) =   3.29
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1393.0 FT WITH ELEVATION-DROP =  15.0 FT, IS   80.6 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  11415.00
  LONGEST FLOWPATH FROM NODE  11410.00 TO NODE  11415.00 =  3513.58 FEET.
```



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****************************************************************************
  FLOW PROCESS FROM NODE LR011415.0 TO NODE LR011416.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1175.00  DOWNSTREAM ELEVATION(FEET) = 1140.00
  STREET LENGTH(FEET) =  2260.01   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     154.30
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.90
    HALFSTREET FLOOD WIDTH(FEET) =   48.91
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.02
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.52
  STREET FLOW TRAVEL TIME(MIN.) =   7.51   Tc(MIN.) =  36.59
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.682
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       77.34      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.97      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.13
  SUBAREA AREA(ACRES) =   82.31      SUBAREA RUNOFF(CFS) =  117.38
  EFFECTIVE AREA(ACRES) =    140.66    AREA-AVERAGED Fm(INCH/HR) =  0.10
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.14
  TOTAL AREA(ACRES) =    140.66        PEAK FLOW RATE(CFS) =     199.87

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 3.24

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.97   HALFSTREET FLOOD WIDTH(FEET) =  53.95
  FLOW VELOCITY(FEET/SEC.) =  5.34   DEPTH*VELOCITY(FT*FT/SEC.) =   5.16

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.87
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.41
  PIPE-FLOW(CFS) =     94.74
  PIPEFLOW TRAVEL TIME(MIN.) =   3.30    Tc(MIN.) =  32.38
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 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.810
 SUBAREA AREA(ACRES) =   82.31      SUBAREA RUNOFF(CFS) =  126.86
 TOTAL AREA(ACRES) =    140.66        PEAK FLOW RATE(CFS) =    216.06

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 3.24
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  121.32
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.84
   HALFSTREET FLOOD WIDTH(FEET) =   42.81
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.82
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.05
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
       AND L =  2260.0 FT WITH ELEVATION-DROP =  35.0 FT, IS  202.5 CFS,
       WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  11416.00
 LONGEST FLOWPATH FROM NODE  11410.00 TO NODE  11416.00 =  5773.59 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR011416.0 TO NODE LR011416.0 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  32.38
 RAINFALL INTENSITY(INCH/HR) =   1.81
 AREA-AVERAGED Fm(INCH/HR) =  0.10
 AREA-AVERAGED Fp(INCH/HR) =  0.75
 AREA-AVERAGED Ap =  0.14
 EFFECTIVE STREAM AREA(ACRES) =   140.66
 TOTAL STREAM AREA(ACRES) =   140.66
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    216.06

 ** CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    258.99  29.19    1.926  0.75( 0.11) 0.14   148.4 LR011400.0
     2    216.06  32.38    1.810  0.75( 0.10) 0.14   140.7 LR011410.0

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    467.04  29.19    1.926  0.75( 0.10) 0.14   275.2 LR011400.0
     2    458.54  32.38    1.810  0.75( 0.10) 0.14   289.1 LR011410.0

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    467.04    Tc(MIN.) =    29.19
 EFFECTIVE AREA(ACRES) =   275.25   AREA-AVERAGED Fm(INCH/HR) =  0.10
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.14
 TOTAL AREA(ACRES) =    289.08
 LONGEST FLOWPATH FROM NODE  11400.00 TO NODE  11416.00 =  7230.16 FEET.

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 FLOW PROCESS FROM NODE LR011416.0 TO NODE LR011426.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1140.00  DOWNSTREAM ELEVATION(FEET) = 1139.00
 STREET LENGTH(FEET) =  1350.81   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 39.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     470.63
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  2.01
   HALFSTREET FLOOD WIDTH(FEET) =  106.38
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.29
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.61
 STREET FLOW TRAVEL TIME(MIN.) =   9.83   Tc(MIN.) =  39.03
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.618
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 B        3.95      0.75      0.10    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.61      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.24
 SUBAREA AREA(ACRES) =    5.56      SUBAREA RUNOFF(CFS) =    7.18
 EFFECTIVE AREA(ACRES) =    280.81    AREA-AVERAGED Fm(INCH/HR) =  0.11
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.14
 TOTAL AREA(ACRES) =    294.64        PEAK FLOW RATE(CFS) =     467.04
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 5.15

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 2.01   HALFSTREET FLOOD WIDTH(FEET) = 106.14
 FLOW VELOCITY(FEET/SEC.) =  2.28   DEPTH*VELOCITY(FT*FT/SEC.) =   4.59

 *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
        THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 1.07
 SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
 ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
 ESTIMATED PIPE DIAMETER(INCH) = 120.00    NUMBER OF PIPES =   1
 ASSUME FULL-FLOWING PIPELINE
 PIPE-FLOW VELOCITY(FEET/SEC.) =   5.28
 PIPE-FLOW(CFS) =    415.00
 PIPEFLOW TRAVEL TIME(MIN.) =   4.26    Tc(MIN.) =  33.46
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  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.775
  SUBAREA AREA(ACRES) =    5.56      SUBAREA RUNOFF(CFS) =    7.96
  TOTAL AREA(ACRES) =    294.64        PEAK FLOW RATE(CFS) =    467.04
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 5.15
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   52.04
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.01
    HALFSTREET FLOOD WIDTH(FEET) =   56.09
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.24
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.25
  LONGEST FLOWPATH FROM NODE  11400.00 TO NODE  11426.00 =  8580.97 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011426.0 TO NODE LR011426.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  33.46
  RAINFALL INTENSITY(INCH/HR) =   1.77
  AREA-AVERAGED Fm(INCH/HR) =  0.11
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.14
  EFFECTIVE STREAM AREA(ACRES) =   280.81
  TOTAL STREAM AREA(ACRES) =   294.64
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    467.04

****************************************************************************
  FLOW PROCESS FROM NODE LR011420.0 TO NODE LR011421.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   734.43
  ELEVATION DATA: UPSTREAM(FEET) =   1175.00  DOWNSTREAM(FEET) =   1165.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.056
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.650
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 B        8.59      0.75      0.10    56   10.06
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.65      0.75      0.60    56   13.63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.14
  SUBAREA RUNOFF(CFS) =     29.52
  TOTAL AREA(ACRES) =      9.24   PEAK FLOW RATE(CFS) =     29.52

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.39
```



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****************************************************************************
  FLOW PROCESS FROM NODE LR011421.0 TO NODE LR011422.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1165.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1162.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   254.96
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.17000
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.541
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        7.12      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.54      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.14
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     41.40
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.10
  AVERAGE FLOW DEPTH(FEET) =   1.00   FLOOD WIDTH(FEET) =   10.65
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.52   Tc(MIN.) =  10.58
  SUBAREA AREA(ACRES) =    7.66       SUBAREA RUNOFF(CFS) =   23.71
  EFFECTIVE AREA(ACRES) =   16.90     AREA-AVERAGED Fm(INCH/HR) =   0.10
  AREA-AVERAGED Fp(INCH/HR) =   0.75  AREA-AVERAGED Ap =   0.14
  TOTAL AREA(ACRES) =     16.90         PEAK FLOW RATE(CFS) =      52.32

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.39
  ** PIPE SIZED TO MAXIMIZE V-GUTTER FLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.19
  PIPE-FLOW(CFS) =     22.62
  PIPEFLOW TRAVEL TIME(MIN.) =   0.59    Tc(MIN.) =  10.65
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.527
  SUBAREA AREA(ACRES) =    7.66      SUBAREA RUNOFF(CFS) =   23.62
  EFFECTIVE AREA(ACRES) =   16.90    AREA-AVERAGED Fm(INCH/HR) =  0.10
  AREA-AVERAGED Fp(INCH/HR) =  0.51  AREA-AVERAGED Ap =  0.20
  TOTAL AREA(ACRES) =     16.90        PEAK FLOW RATE(CFS) =     52.11
  V-GUTTER HYDRAULICS BASED ON MAINLINE Tc :
  V-GUTTER HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   29.49

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.92   FLOOD WIDTH(FEET) =    9.68
  FLOW VELOCITY(FEET/SEC.) =   6.89   DEPTH*VELOCITY(FT*FT/SEC) =   6.33
  LONGEST FLOWPATH FROM NODE  11420.00 TO NODE  11422.00 =   989.39 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011422.0 TO NODE LR011423.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1162.00
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 DOWNSTREAM NODE ELEVATION(FEET) =   1160.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   285.52
 "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
 PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
 PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
 MAXIMUM DEPTH(FEET) =   1.00
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.305
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 B        7.62      0.75      0.10    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.56      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.13
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     63.91
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.71
 AVERAGE FLOW DEPTH(FEET) =   0.86   FLOOD WIDTH(FEET) =   62.52
 "V" GUTTER FLOW TRAVEL TIME(MIN.) =   1.28   Tc(MIN.) =  11.87
 SUBAREA AREA(ACRES) =    8.18       SUBAREA RUNOFF(CFS) =   23.60
 EFFECTIVE AREA(ACRES) =   25.08     AREA-AVERAGED Fm(INCH/HR) =   0.10
 AREA-AVERAGED Fp(INCH/HR) =   0.57  AREA-AVERAGED Ap =   0.18
 TOTAL AREA(ACRES) =     25.08         PEAK FLOW RATE(CFS) =      72.33

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

 END OF SUBAREA "V" GUTTER HYDRAULICS:
 DEPTH(FEET) =  0.88   FLOOD WIDTH(FEET) =   65.80
 FLOW VELOCITY(FEET/SEC.) =   3.80   DEPTH*VELOCITY(FT*FT/SEC) =   3.36
 LONGEST FLOWPATH FROM NODE  11420.00 TO NODE  11423.00 =  1274.91 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR011423.0 TO NODE LR011424.0 IS CODE =  92
----------------------------------------------------------------------------
 >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =   1160.00
 DOWNSTREAM NODE ELEVATION(FEET) =   1155.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   438.00
 "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
 PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
 PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
 MAXIMUM DEPTH(FEET) =   1.00
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.076
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 B       11.92      0.75      0.10    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.89      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.13
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     89.47
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.83
 AVERAGE FLOW DEPTH(FEET) =   0.88   FLOOD WIDTH(FEET) =   64.91
 "V" GUTTER FLOW TRAVEL TIME(MIN.) =   1.51   Tc(MIN.) =  13.38
 SUBAREA AREA(ACRES) =   12.81       SUBAREA RUNOFF(CFS) =   34.30
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 EFFECTIVE AREA(ACRES) =   37.89     AREA-AVERAGED Fm(INCH/HR) =   0.10
 AREA-AVERAGED Fp(INCH/HR) =   0.62  AREA-AVERAGED Ap =   0.16
 TOTAL AREA(ACRES) =     37.89         PEAK FLOW RATE(CFS) =     101.45

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

 END OF SUBAREA "V" GUTTER HYDRAULICS:
 DEPTH(FEET) =  0.91   FLOOD WIDTH(FEET) =   68.34
 FLOW VELOCITY(FEET/SEC.) =   4.95   DEPTH*VELOCITY(FT*FT/SEC) =   4.48
 LONGEST FLOWPATH FROM NODE  11420.00 TO NODE  11424.00 =  1712.91 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR011424.0 TO NODE LR011425.0 IS CODE =  92
----------------------------------------------------------------------------
 >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =   1155.00
 DOWNSTREAM NODE ELEVATION(FEET) =   1150.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   584.00
 "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
 PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
 PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
 MAXIMUM DEPTH(FEET) =   1.00
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.818
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 B       15.83      0.75      0.10    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.17      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.13
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    122.22
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.62
 AVERAGE FLOW DEPTH(FEET) =   0.99   FLOOD WIDTH(FEET) =   77.90
 "V" GUTTER FLOW TRAVEL TIME(MIN.) =   2.10   Tc(MIN.) =  15.48
 SUBAREA AREA(ACRES) =   17.00       SUBAREA RUNOFF(CFS) =   41.57
 EFFECTIVE AREA(ACRES) =   54.89     AREA-AVERAGED Fm(INCH/HR) =   0.10
 AREA-AVERAGED Fp(INCH/HR) =   0.66  AREA-AVERAGED Ap =   0.15
 TOTAL AREA(ACRES) =     54.89         PEAK FLOW RATE(CFS) =     134.22

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
 ** PIPE SIZED TO MAXIMIZE V-GUTTER FLOW AT DOWNSTREAM NODE **
 ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
 ASSUME FULL-FLOWING PIPELINE
 PIPE-FLOW VELOCITY(FEET/SEC.) =   6.14
 PIPE-FLOW(CFS) =     19.30
 PIPEFLOW TRAVEL TIME(MIN.) =   1.59    Tc(MIN.) =  14.96
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.876
 SUBAREA AREA(ACRES) =   17.00       SUBAREA RUNOFF(CFS) =   42.46
 EFFECTIVE AREA(ACRES) =   54.89    AREA-AVERAGED Fm(INCH/HR) =  0.10
 AREA-AVERAGED Fp(INCH/HR) =  0.52  AREA-AVERAGED Ap =  0.20
 TOTAL AREA(ACRES) =     54.89        PEAK FLOW RATE(CFS) =    137.09
 V-GUTTER HYDRAULICS BASED ON MAINLINE Tc :
 V-GUTTER HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  117.80
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  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.98   FLOOD WIDTH(FEET) =   76.71
  FLOW VELOCITY(FEET/SEC.) =   4.59   DEPTH*VELOCITY(FT*FT/SEC) =   4.49
  LONGEST FLOWPATH FROM NODE  11420.00 TO NODE  11425.00 =  2296.91 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011425.0 TO NODE LR011426.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1150.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1139.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   770.03
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.606
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.58      0.75      0.60    56
  COMMERCIAL                 B       15.68      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.15
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    156.49
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.97
  AVERAGE FLOW DEPTH(FEET) =   0.98   FLOOD WIDTH(FEET) =   77.60
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   2.15   Tc(MIN.) =  17.63
  SUBAREA AREA(ACRES) =   17.26       SUBAREA RUNOFF(CFS) =   38.79
  EFFECTIVE AREA(ACRES) =   72.15     AREA-AVERAGED Fm(INCH/HR) =   0.10
  AREA-AVERAGED Fp(INCH/HR) =   0.56  AREA-AVERAGED Ap =   0.18
  TOTAL AREA(ACRES) =     72.15         PEAK FLOW RATE(CFS) =     162.55

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.92; 6HR = 2.53; 24HR = 5.50

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.99   FLOOD WIDTH(FEET) =   78.80
  FLOW VELOCITY(FEET/SEC.) =   6.01   DEPTH*VELOCITY(FT*FT/SEC) =   5.98
  LONGEST FLOWPATH FROM NODE  11420.00 TO NODE  11426.00 =  3066.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011426.0 TO NODE LR011426.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  17.63
  RAINFALL INTENSITY(INCH/HR) =   2.61
  AREA-AVERAGED Fm(INCH/HR) =  0.10
  AREA-AVERAGED Fp(INCH/HR) =  0.56
  AREA-AVERAGED Ap =  0.18
  EFFECTIVE STREAM AREA(ACRES) =    72.15
  TOTAL STREAM AREA(ACRES) =    72.15
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  PEAK FLOW RATE(CFS) AT CONFLUENCE =    162.55

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    467.04  33.46    1.775  0.75( 0.11) 0.14   280.8 LR011400.0
      1    458.54  36.64    1.680  0.75( 0.11) 0.14   294.6 LR011410.0
      2    162.55  17.63    2.606  0.56( 0.10) 0.18    72.2 LR011420.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    531.40  17.63    2.606  0.68( 0.11) 0.16   220.2 LR011420.0
      2    575.60  33.46    1.775  0.70( 0.11) 0.15   353.0 LR011400.0
      3    560.99  36.64    1.680  0.70( 0.11) 0.15   366.8 LR011410.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    575.60    Tc(MIN.) =    33.46
  EFFECTIVE AREA(ACRES) =   352.96   AREA-AVERAGED Fm(INCH/HR) =  0.11
  AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.15
  TOTAL AREA(ACRES) =    366.79
  LONGEST FLOWPATH FROM NODE  11400.00 TO NODE  11426.00 =  8580.97 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011426.0 TO NODE LR011436.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1139.00  DOWNSTREAM ELEVATION(FEET) = 1138.00
  STREET LENGTH(FEET) =  1323.13   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     578.91
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  2.16
    HALFSTREET FLOOD WIDTH(FEET) =  113.83
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.43
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.25
  STREET FLOW TRAVEL TIME(MIN.) =   9.08   Tc(MIN.) =  42.54
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.537
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
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  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.61      0.75      0.60    56
  COMMERCIAL                 B        3.83      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.25
  SUBAREA AREA(ACRES) =    5.44      SUBAREA RUNOFF(CFS) =    6.61
  EFFECTIVE AREA(ACRES) =    358.40    AREA-AVERAGED Fm(INCH/HR) =  0.11
  AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.15
  TOTAL AREA(ACRES) =    372.23        PEAK FLOW RATE(CFS) =     575.60
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.97; 6HR = 2.64; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 2.16   HALFSTREET FLOOD WIDTH(FEET) = 113.58
  FLOW VELOCITY(FEET/SEC.) =  2.43   DEPTH*VELOCITY(FT*FT/SEC.) =   5.24

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 1.07
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) = 132.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.68
  PIPE-FLOW(CFS) =    540.68
  PIPEFLOW TRAVEL TIME(MIN.) =   3.88    Tc(MIN.) =  37.34
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.662
  SUBAREA AREA(ACRES) =    5.44      SUBAREA RUNOFF(CFS) =    7.23
  TOTAL AREA(ACRES) =    372.23        PEAK FLOW RATE(CFS) =    575.60
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.97; 6HR = 2.64; 24HR = 5.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   34.92
    ***STREET FLOW SPLITS OVER STREET-CROWN***
    FULL DEPTH(FEET) =    0.94   FLOOD WIDTH(FEET) =   52.58
    FULL HALF-STREET VELOCITY(FEET/SEC.) =    1.14
    SPLIT DEPTH(FEET) =    0.87   SPLIT FLOOD WIDTH(FEET) =   46.25
    SPLIT FLOW(CFS) =   15.34   SPLIT VELOCITY(FEET/SEC.) =    1.09
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.94
    HALFSTREET FLOOD WIDTH(FEET) =   52.58
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.14
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.07
  LONGEST FLOWPATH FROM NODE  11400.00 TO NODE  11436.00 =  9904.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011436.0 TO NODE LR011436.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  37.34
  RAINFALL INTENSITY(INCH/HR) =   1.66
  AREA-AVERAGED Fm(INCH/HR) =  0.11
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  AREA-AVERAGED Fp(INCH/HR) =  0.70
  AREA-AVERAGED Ap =  0.15
  EFFECTIVE STREAM AREA(ACRES) =   358.40
  TOTAL STREAM AREA(ACRES) =   372.23
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    575.60

****************************************************************************
  FLOW PROCESS FROM NODE LR011430.0 TO NODE LR011431.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   912.51
  ELEVATION DATA: UPSTREAM(FEET) =   1172.00  DOWNSTREAM(FEET) =   1168.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.760
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.024
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.87      0.75      0.60    56   18.65
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        5.10      0.63      1.00    65   31.95
  COMMERCIAL                 B        3.66      0.75      0.10    56   13.76
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.65
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.62
  SUBAREA RUNOFF(CFS) =     22.72
  TOTAL AREA(ACRES) =      9.63   PEAK FLOW RATE(CFS) =     22.72

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.39

****************************************************************************
  FLOW PROCESS FROM NODE LR011431.0 TO NODE LR011432.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1168.00  DOWNSTREAM ELEVATION(FEET) = 1166.00
  STREET LENGTH(FEET) =   292.62   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      33.47
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.65
    HALFSTREET FLOOD WIDTH(FEET) =   24.62
```

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  AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.68
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.74
STREET FLOW TRAVEL TIME(MIN.) =   1.82   Tc(MIN.) =  15.58
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.807
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
AGRICULTURAL FAIR COVER
"ORCHARDS"                 B        5.90      0.63      1.00    65
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        0.50      0.75      0.60    56
COMMERCIAL                 B        3.60      0.75      0.10    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.64
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.66
SUBAREA AREA(ACRES) =   10.00      SUBAREA RUNOFF(CFS) =   21.47
EFFECTIVE AREA(ACRES) =     19.63    AREA-AVERAGED Fm(INCH/HR) =  0.41
AREA-AVERAGED Fp(INCH/HR) =  0.64  AREA-AVERAGED Ap =  0.64
TOTAL AREA(ACRES) =     19.63        PEAK FLOW RATE(CFS) =      42.31

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.39

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.70   HALFSTREET FLOOD WIDTH(FEET) =  28.35
FLOW VELOCITY(FEET/SEC.) =  2.84   DEPTH*VELOCITY(FT*FT/SEC.) =   1.98
LONGEST FLOWPATH FROM NODE  11430.00 TO NODE  11432.00 =  1205.13 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR011432.0 TO NODE LR011433.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1166.00  DOWNSTREAM ELEVATION(FEET) = 1163.00
 STREET LENGTH(FEET) =   282.00   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 32.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      51.93
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.69
   HALFSTREET FLOOD WIDTH(FEET) =   28.03
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.53
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.45
 STREET FLOW TRAVEL TIME(MIN.) =   1.33   Tc(MIN.) =  16.91
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.672
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
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 AGRICULTURAL FAIR COVER
 "ORCHARDS"                 B        5.29      0.63      1.00    65
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.45      0.75      0.60    56
 COMMERCIAL                 B        3.68      0.75      0.10    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.64
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
 SUBAREA AREA(ACRES) =    9.42      SUBAREA RUNOFF(CFS) =   19.23
 EFFECTIVE AREA(ACRES) =     29.05    AREA-AVERAGED Fm(INCH/HR) =  0.41
 AREA-AVERAGED Fp(INCH/HR) =  0.64  AREA-AVERAGED Ap =  0.64
 TOTAL AREA(ACRES) =     29.05        PEAK FLOW RATE(CFS) =      59.16

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.72   HALFSTREET FLOOD WIDTH(FEET) =  30.85
 FLOW VELOCITY(FEET/SEC.) =  3.62   DEPTH*VELOCITY(FT*FT/SEC.) =   2.61
 LONGEST FLOWPATH FROM NODE  11430.00 TO NODE  11433.00 =  1487.13 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR011433.0 TO NODE LR011434.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1163.00  DOWNSTREAM ELEVATION(FEET) = 1155.00
 STREET LENGTH(FEET) =   460.52   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 32.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.99

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      74.40
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.72
   HALFSTREET FLOOD WIDTH(FEET) =   30.38
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.63
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.32
 STREET FLOW TRAVEL TIME(MIN.) =   1.66   Tc(MIN.) =  18.57
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.527
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL FAIR COVER
 "ORCHARDS"                 B        9.40      0.63      1.00    65
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.77      0.75      0.60    56
 COMMERCIAL                 B        5.89      0.75      0.10    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.64
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.65
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  SUBAREA AREA(ACRES) =   16.06      SUBAREA RUNOFF(CFS) =   30.48
  EFFECTIVE AREA(ACRES) =     45.11    AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.64  AREA-AVERAGED Ap =  0.64
  TOTAL AREA(ACRES) =     45.11        PEAK FLOW RATE(CFS) =      85.83

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.75   HALFSTREET FLOOD WIDTH(FEET) =  33.50
  FLOW VELOCITY(FEET/SEC.) =  4.75   DEPTH*VELOCITY(FT*FT/SEC.) =   3.55
  LONGEST FLOWPATH FROM NODE  11430.00 TO NODE  11434.00 =  1947.65 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011434.0 TO NODE LR011435.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1155.00  DOWNSTREAM ELEVATION(FEET) = 1150.00
  STREET LENGTH(FEET) =   597.51   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     103.04
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.86
    HALFSTREET FLOOD WIDTH(FEET) =   41.91
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.81
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.29
  STREET FLOW TRAVEL TIME(MIN.) =   2.62   Tc(MIN.) =  21.19
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.334
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B       11.52      0.63      1.00    65
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.97      0.75      0.60    56
  COMMERCIAL                 B        7.42      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.64
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.65
  SUBAREA AREA(ACRES) =   19.91      SUBAREA RUNOFF(CFS) =   34.41
  EFFECTIVE AREA(ACRES) =     65.02    AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.64  AREA-AVERAGED Ap =  0.64
  TOTAL AREA(ACRES) =     65.02        PEAK FLOW RATE(CFS) =     112.43

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
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  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.88   HALFSTREET FLOOD WIDTH(FEET) =  42.88
  FLOW VELOCITY(FEET/SEC.) =  3.91   DEPTH*VELOCITY(FT*FT/SEC.) =   3.46
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  597.5 FT WITH ELEVATION-DROP =   5.0 FT, IS   57.4 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  11435.00
  LONGEST FLOWPATH FROM NODE  11430.00 TO NODE  11435.00 =  2545.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011435.0 TO NODE LR011436.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1150.00  DOWNSTREAM ELEVATION(FEET) = 1138.00
  STREET LENGTH(FEET) =   744.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.01

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     130.50
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.85
    HALFSTREET FLOOD WIDTH(FEET) =   40.93
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.13
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.33
  STREET FLOW TRAVEL TIME(MIN.) =   2.42   Tc(MIN.) =  23.61
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.188
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B       13.26      0.63      1.00    65
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.17      0.75      0.60    56
  COMMERCIAL                 B        7.43      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.65
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA AREA(ACRES) =   22.86      SUBAREA RUNOFF(CFS) =   36.12
  EFFECTIVE AREA(ACRES) =     87.88    AREA-AVERAGED Fm(INCH/HR) =  0.42
  AREA-AVERAGED Fp(INCH/HR) =  0.64  AREA-AVERAGED Ap =  0.65
  TOTAL AREA(ACRES) =     87.88        PEAK FLOW RATE(CFS) =     139.97

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
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  DEPTH(FEET) = 0.86   HALFSTREET FLOOD WIDTH(FEET) =  41.66
  FLOW VELOCITY(FEET/SEC.) =  5.25   DEPTH*VELOCITY(FT*FT/SEC.) =   4.51
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  744.0 FT WITH ELEVATION-DROP =  12.0 FT, IS   67.5 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  11436.00
  LONGEST FLOWPATH FROM NODE  11430.00 TO NODE  11436.00 =  3289.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011436.0 TO NODE LR011436.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  23.61
  RAINFALL INTENSITY(INCH/HR) =   2.19
  AREA-AVERAGED Fm(INCH/HR) =  0.42
  AREA-AVERAGED Fp(INCH/HR) =  0.64
  AREA-AVERAGED Ap =  0.65
  EFFECTIVE STREAM AREA(ACRES) =    87.88
  TOTAL STREAM AREA(ACRES) =    87.88
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    139.97

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    531.40  21.64    2.305  0.68( 0.11) 0.16   225.6 LR011420.0
      1    575.60  37.34    1.662  0.70( 0.11) 0.15   358.4 LR011400.0
      1    560.99  40.52    1.582  0.70( 0.11) 0.15   372.2 LR011410.0
      2    139.97  23.61    2.188  0.64( 0.42) 0.65    87.9 LR011430.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    668.20  21.64    2.305  0.66( 0.19) 0.29   306.1 LR011420.0
      2    676.92  23.61    2.188  0.66( 0.19) 0.29   330.1 LR011430.0
      3    673.95  37.34    1.662  0.67( 0.17) 0.25   446.3 LR011400.0
      4    653.04  40.52    1.582  0.67( 0.17) 0.25   460.1 LR011410.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    676.92    Tc(MIN.) =    23.61
  EFFECTIVE AREA(ACRES) =   330.13   AREA-AVERAGED Fm(INCH/HR) =  0.19
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.29
  TOTAL AREA(ACRES) =    460.11
  LONGEST FLOWPATH FROM NODE  11400.00 TO NODE  11436.00 =  9904.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011436.0 TO NODE LR011437.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1138.00  DOWNSTREAM ELEVATION(FEET) = 1120.00
  STREET LENGTH(FEET) =  1425.88   CURB HEIGHT(INCHES) =  8.0
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  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     711.57
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.43
    HALFSTREET FLOOD WIDTH(FEET) =   77.15
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.24
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   10.36
  STREET FLOW TRAVEL TIME(MIN.) =   3.28   Tc(MIN.) =  26.89
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.023
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  SCHOOL                     B        2.47      0.75      0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.12      0.75      0.60    56
  COMMERCIAL                 B       12.47      0.75      0.10    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B       33.73      0.63      1.00    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.64
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.75
  SUBAREA AREA(ACRES) =   49.79      SUBAREA RUNOFF(CFS) =   69.26
  EFFECTIVE AREA(ACRES) =    379.92    AREA-AVERAGED Fm(INCH/HR) =  0.23
  AREA-AVERAGED Fp(INCH/HR) =  0.65  AREA-AVERAGED Ap =  0.35
  TOTAL AREA(ACRES) =    509.90        PEAK FLOW RATE(CFS) =     676.92
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.41   HALFSTREET FLOOD WIDTH(FEET) =  75.99
  FLOW VELOCITY(FEET/SEC.) =  7.15   DEPTH*VELOCITY(FT*FT/SEC.) =  10.06

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 1.07
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  78.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.36
  PIPE-FLOW(CFS) =    543.23
  PIPEFLOW TRAVEL TIME(MIN.) =   1.45    Tc(MIN.) =  25.06
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.111
  SUBAREA AREA(ACRES) =   49.79      SUBAREA RUNOFF(CFS) =   73.17
  TOTAL AREA(ACRES) =    509.90        PEAK FLOW RATE(CFS) =    676.92
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
```

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  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  133.69
    ***STREET FLOW SPLITS OVER STREET-CROWN***
    FULL DEPTH(FEET) =    0.94   FLOOD WIDTH(FEET) =   52.58
    FULL HALF-STREET VELOCITY(FEET/SEC.) =    4.64
    SPLIT DEPTH(FEET) =    0.84   SPLIT FLOOD WIDTH(FEET) =   42.35
    SPLIT FLOW(CFS) =   53.67   SPLIT VELOCITY(FEET/SEC.) =    4.33
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.94
    HALFSTREET FLOOD WIDTH(FEET) =   52.58
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.64
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.35
  LONGEST FLOWPATH FROM NODE  11400.00 TO NODE  11437.00 = 11329.98 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =    509.90  TC(MIN.) =     25.06
  EFFECTIVE AREA(ACRES) =    379.92  AREA-AVERAGED Fm(INCH/HR)=  0.23
  AREA-AVERAGED Fp(INCH/HR) =  0.65  AREA-AVERAGED Ap =  0.35
  PEAK FLOW RATE(CFS)   =    676.92

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    668.20  23.09    2.217  0.65( 0.23) 0.35   355.9 LR011420.0
      2    676.92  25.06    2.111  0.65( 0.23) 0.35   379.9 LR011430.0
      3    673.95  38.79    1.624  0.66( 0.20) 0.30   496.1 LR011400.0
      4    653.04  41.97    1.549  0.67( 0.20) 0.30   509.9 LR011410.0
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
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**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                           County of San Bernardino
                         Transportation Flood Control

                          Water Resources Division

--------------------------------------------------------------------------
  FILE NAME: LR0115ZZ.Z13
  TIME/DATE OF STUDY: 10:47 09/13/2004
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.2500

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)     (n)
===  =====  ========  =================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
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    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


**************************************************************************
  FLOW PROCESS FROM NODE LR011500.0 TO NODE LR011501.0 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   700.38
  ELEVATION DATA: UPSTREAM(FEET) =   1139.00  DOWNSTREAM(FEET) =   1137.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.486
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.061
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.43      0.75       0.60    56   18.28
  COMMERCIAL                 B        4.01      0.75       0.10    56   13.49
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.15
  SUBAREA RUNOFF(CFS) =     11.79
  TOTAL AREA(ACRES) =      4.44   PEAK FLOW RATE(CFS) =     11.79

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 3.27

**************************************************************************
  FLOW PROCESS FROM NODE LR011501.0 TO NODE LR011502.0 IS CODE =  92
--------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
==========================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1137.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1135.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   682.28
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.480
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

```
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL               B        3.90      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"     B        0.84      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.19
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     16.78
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.01
  AVERAGE FLOW DEPTH(FEET) =   0.69   FLOOD WIDTH(FEET) =   42.65
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   5.67   Tc(MIN.) =  19.16
  SUBAREA AREA(ACRES) =    4.74       SUBAREA RUNOFF(CFS) =    9.98
  EFFECTIVE AREA(ACRES) =    9.18     AREA-AVERAGED Fm(INCH/HR) =   0.13
  AREA-AVERAGED Fp(INCH/HR) =   0.75  AREA-AVERAGED Ap =   0.17
  TOTAL AREA(ACRES) =      9.18         PEAK FLOW RATE(CFS) =      19.44

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 3.08

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.71   FLOOD WIDTH(FEET) =   45.49
  FLOW VELOCITY(FEET/SEC.) =   2.06   DEPTH*VELOCITY(FT*FT/SEC) =   1.47
  LONGEST FLOWPATH FROM NODE  11500.00 TO NODE  11502.00 =  1382.66 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011502.0 TO NODE LR011503.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1135.00  DOWNSTREAM ELEVATION(FEET) = 1130.00
  STREET LENGTH(FEET) =   607.75   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      36.98
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.65
    HALFSTREET FLOOD WIDTH(FEET) =   24.66
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.95
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.92
  STREET FLOW TRAVEL TIME(MIN.) =   3.44   Tc(MIN.) =  22.59
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.246
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       17.51      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.51      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
```



```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.11
  SUBAREA AREA(ACRES) =   18.02      SUBAREA RUNOFF(CFS) =   35.04
  EFFECTIVE AREA(ACRES) =     27.20    AREA-AVERAGED Fm(INCH/HR) =  0.10
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.13
  TOTAL AREA(ACRES) =     27.20        PEAK FLOW RATE(CFS) =      52.55

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 3.14

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.72   HALFSTREET FLOOD WIDTH(FEET) =  30.94
  FLOW VELOCITY(FEET/SEC.) =  3.20   DEPTH*VELOCITY(FT*FT/SEC.) =   2.31
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  607.8 FT WITH ELEVATION-DROP =   5.0 FT, IS   56.9 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  11503.00
  LONGEST FLOWPATH FROM NODE  11500.00 TO NODE  11503.00 =  1990.41 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011503.0 TO NODE LR011504.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1130.00  DOWNSTREAM ELEVATION(FEET) = 1115.00
  STREET LENGTH(FEET) =  1118.01   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      83.90
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.77
    HALFSTREET FLOOD WIDTH(FEET) =   35.94
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.25
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.28
  STREET FLOW TRAVEL TIME(MIN.) =   4.39   Tc(MIN.) =  26.98
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.019
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       33.83      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.43      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.13
  SUBAREA AREA(ACRES) =   36.26      SUBAREA RUNOFF(CFS) =   62.64
  EFFECTIVE AREA(ACRES) =     63.46    AREA-AVERAGED Fm(INCH/HR) =  0.10
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.13
  TOTAL AREA(ACRES) =     63.46        PEAK FLOW RATE(CFS) =     109.64
```

```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 3.09

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.83   HALFSTREET FLOOD WIDTH(FEET) =  42.19
  FLOW VELOCITY(FEET/SEC.) =  4.45   DEPTH*VELOCITY(FT*FT/SEC.) =   3.71
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1118.0 FT WITH ELEVATION-DROP =  15.0 FT, IS  104.2 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  11504.00
  LONGEST FLOWPATH FROM NODE  11500.00 TO NODE  11504.00 =  3108.42 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011504.0 TO NODE LR011505.0 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1115.00  DOWNSTREAM(FEET) =  1114.00
  FLOW LENGTH(FEET) =  1297.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  75.0 INCH PIPE IS  56.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.46
  ESTIMATED PIPE DIAMETER(INCH) =  75.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    109.64
  PIPE TRAVEL TIME(MIN.) =   4.84    Tc(MIN.) =  31.82
  LONGEST FLOWPATH FROM NODE  11500.00 TO NODE  11505.00 =  4405.42 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011505.0 TO NODE LR011505.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  31.82
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.829
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       33.83      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.43      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.13
  SUBAREA AREA(ACRES) =   36.26      SUBAREA RUNOFF(CFS) =   56.42
  EFFECTIVE AREA(ACRES) =     99.72   AREA-AVERAGED Fm(INCH/HR) =  0.10
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.13
  TOTAL AREA(ACRES) =     99.72       PEAK FLOW RATE(CFS) =     155.18

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 3.09

****************************************************************************
  FLOW PROCESS FROM NODE LR011505.0 TO NODE LR011506.0 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1114.00  DOWNSTREAM(FEET) =  1102.00
  FLOW LENGTH(FEET) =  1304.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  39.8 INCHES
```



```
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.36
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    155.18
  PIPE TRAVEL TIME(MIN.) =   1.76    Tc(MIN.) =  33.58
  LONGEST FLOWPATH FROM NODE  11500.00 TO NODE  11506.00 =  5709.42 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011506.0 TO NODE LR011506.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  33.58
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.771
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       88.90      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        8.95      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.15
  SUBAREA AREA(ACRES) =   97.85      SUBAREA RUNOFF(CFS) =  146.34
  EFFECTIVE AREA(ACRES) =    197.57   AREA-AVERAGED Fm(INCH/HR) =  0.10
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.14
  TOTAL AREA(ACRES) =    197.57       PEAK FLOW RATE(CFS) =     296.31

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 3.08

****************************************************************************
  FLOW PROCESS FROM NODE LR011506.0 TO NODE LR011506.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  33.58
  RAINFALL INTENSITY(INCH/HR) =   1.77
  AREA-AVERAGED Fm(INCH/HR) =  0.10
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.14
  EFFECTIVE STREAM AREA(ACRES) =   197.57
  TOTAL STREAM AREA(ACRES) =   197.57
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    296.31

****************************************************************************
  FLOW PROCESS FROM NODE LR011505.1 TO NODE LR011505.2 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1008.46
  ELEVATION DATA: UPSTREAM(FEET) =   1120.00  DOWNSTREAM(FEET) =   1117.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.475
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.818
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
```

```
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
COMMERCIAL                  B        8.34      0.75       0.10    56   15.48
RESIDENTIAL
"3-4 DWELLINGS/ACRE"        B        1.08      0.75       0.60    56   20.97
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.16
SUBAREA RUNOFF(CFS) =     22.90
TOTAL AREA(ACRES) =      9.42   PEAK FLOW RATE(CFS) =     22.90

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 3.08

****************************************************************************
FLOW PROCESS FROM NODE LR011505.2 TO NODE LR011505.3 IS CODE =  92
----------------------------------------------------------------------------
>>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
UPSTREAM NODE ELEVATION(FEET) =   1117.00
DOWNSTREAM NODE ELEVATION(FEET) =   1115.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   771.72
"V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
MAXIMUM DEPTH(FEET) =   1.00
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.332
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
COMMERCIAL                  B       14.19      0.75       0.10    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"        B        0.74      0.75       0.60    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.12
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     37.89
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.24
AVERAGE FLOW DEPTH(FEET) =   0.85   FLOOD WIDTH(FEET) =   61.92
"V" GUTTER FLOW TRAVEL TIME(MIN.) =   5.75   Tc(MIN.) =  21.22
SUBAREA AREA(ACRES) =   14.93       SUBAREA RUNOFF(CFS) =   30.08
EFFECTIVE AREA(ACRES) =   24.35     AREA-AVERAGED Fm(INCH/HR) =   0.10
AREA-AVERAGED Fp(INCH/HR) =   0.75  AREA-AVERAGED Ap =   0.14
TOTAL AREA(ACRES) =     24.35         PEAK FLOW RATE(CFS) =      48.85

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 3.08

END OF SUBAREA "V" GUTTER HYDRAULICS:
DEPTH(FEET) =  0.91   FLOOD WIDTH(FEET) =   68.64
FLOW VELOCITY(FEET/SEC.) =   2.36   DEPTH*VELOCITY(FT*FT/SEC) =   2.15
LONGEST FLOWPATH FROM NODE  11505.10 TO NODE  11505.30 =  1780.18 FEET.

****************************************************************************
FLOW PROCESS FROM NODE LR011505.3 TO NODE LR011506.0 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =  1115.00  DOWNSTREAM(FEET) =  1102.00
```



```
FLOW LENGTH(FEET) =  1260.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  33.0 INCH PIPE IS  26.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   9.51
ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     48.85
PIPE TRAVEL TIME(MIN.) =   2.21    Tc(MIN.) =  23.43
LONGEST FLOWPATH FROM NODE  11505.10 TO NODE  11506.00 =  3040.18 FEET.

****************************************************************************
FLOW PROCESS FROM NODE LR011506.0 TO NODE LR011506.0 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN) =  23.43
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.197
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
COMMERCIAL                  B       24.06      0.75       0.10    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"        B        0.94      0.75       0.60    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.12
SUBAREA AREA(ACRES) =   25.00      SUBAREA RUNOFF(CFS) =   47.44
EFFECTIVE AREA(ACRES) =     49.35   AREA-AVERAGED Fm(INCH/HR) =  0.10
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.13
TOTAL AREA(ACRES) =     49.35       PEAK FLOW RATE(CFS) =      93.35

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 3.08

****************************************************************************
FLOW PROCESS FROM NODE LR011506.0 TO NODE LR011506.0 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =  23.43
RAINFALL INTENSITY(INCH/HR) =   2.20
AREA-AVERAGED Fm(INCH/HR) =  0.10
AREA-AVERAGED Fp(INCH/HR) =  0.75
AREA-AVERAGED Ap =  0.13
EFFECTIVE STREAM AREA(ACRES) =    49.35
TOTAL STREAM AREA(ACRES) =    49.35
PEAK FLOW RATE(CFS) AT CONFLUENCE =     93.35

** CONFLUENCE DATA **
 STREAM     Q      Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
 NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
    1    296.31  33.58    1.771  0.75( 0.10) 0.14   197.6 LR011500.0
    2     93.35  23.43    2.197  0.75( 0.10) 0.13    49.3 LR011505.1

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
```

```
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
     1    353.05  23.43    2.197  0.75( 0.10) 0.14   187.2 LR011505.1
     2    370.70  33.58    1.771  0.75( 0.10) 0.14   246.9 LR011500.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    370.70    Tc(MIN.) =    33.58
  EFFECTIVE AREA(ACRES) =   246.92   AREA-AVERAGED Fm(INCH/HR) =  0.10
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.14
  TOTAL AREA(ACRES) =    246.92
  LONGEST FLOWPATH FROM NODE  11500.00 TO NODE  11506.00 =  5709.42 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011506.0 TO NODE LR011507.0 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1102.00  DOWNSTREAM(FEET) =  1090.00
  FLOW LENGTH(FEET) =  1102.97   MANNING'S N =  0.013
  DEPTH OF FLOW IN  72.0 INCH PIPE IS  53.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.32
  ESTIMATED PIPE DIAMETER(INCH) =  72.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    370.70
  PIPE TRAVEL TIME(MIN.) =   1.13    Tc(MIN.) =  34.71
  LONGEST FLOWPATH FROM NODE  11500.00 TO NODE  11507.00 =  6812.39 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011507.0 TO NODE LR011507.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  34.71
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.736
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        7.60      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.36      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.12
  SUBAREA AREA(ACRES) =    7.96      SUBAREA RUNOFF(CFS) =   11.78
  EFFECTIVE AREA(ACRES) =    254.88   AREA-AVERAGED Fm(INCH/HR) =  0.10
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.14
  TOTAL AREA(ACRES) =    254.88       PEAK FLOW RATE(CFS) =     374.77

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 3.08

****************************************************************************
  FLOW PROCESS FROM NODE LR011508.0 TO NODE LR011509.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   682.62
  ELEVATION DATA: UPSTREAM(FEET) =   1140.00  DOWNSTREAM(FEET) =   1139.00
```



```
  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.254
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.843
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.41      0.75      0.60    56   20.67
  COMMERCIAL                 B        1.89      0.75      0.10    56   15.25
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.19
  SUBAREA RUNOFF(CFS) =      5.59
  TOTAL AREA(ACRES) =      2.30   PEAK FLOW RATE(CFS) =      5.59

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.27; 6HR = 1.65; 24HR = 3.31

****************************************************************************
  FLOW PROCESS FROM NODE LR011509.0 TO NODE LR011510.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1139.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1138.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   621.80
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.282
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        9.23      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.20      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.11
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     14.74
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.53
  AVERAGE FLOW DEPTH(FEET) =   0.71   FLOOD WIDTH(FEET) =   45.94
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   6.75   Tc(MIN.) =  22.01
  SUBAREA AREA(ACRES) =    9.43       SUBAREA RUNOFF(CFS) =   18.66
  EFFECTIVE AREA(ACRES) =   11.73     AREA-AVERAGED Fm(INCH/HR) =   0.09
  AREA-AVERAGED Fp(INCH/HR) =   0.75  AREA-AVERAGED Ap =   0.13
  TOTAL AREA(ACRES) =     11.73         PEAK FLOW RATE(CFS) =      23.09

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.27; 6HR = 1.65; 24HR = 3.31

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.80   FLOOD WIDTH(FEET) =   55.65
  FLOW VELOCITY(FEET/SEC.) =   1.67   DEPTH*VELOCITY(FT*FT/SEC) =   1.33
  LONGEST FLOWPATH FROM NODE  11508.00 TO NODE  11510.00 =  1304.42 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011510.0 TO NODE LR011511.0 IS CODE =  31
```

```
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1138.00  DOWNSTREAM(FEET) =  1135.00
  FLOW LENGTH(FEET) =   352.20   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  19.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.47
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     23.09
  PIPE TRAVEL TIME(MIN.) =   0.79    Tc(MIN.) =  22.79
  LONGEST FLOWPATH FROM NODE  11508.00 TO NODE  11511.00 =  1656.62 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011511.0 TO NODE LR011511.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  22.79
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.234
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       19.46      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.50      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.11
  SUBAREA AREA(ACRES) =   19.96      SUBAREA RUNOFF(CFS) =   38.62
  EFFECTIVE AREA(ACRES) =     31.69   AREA-AVERAGED Fm(INCH/HR) =  0.09
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.12
  TOTAL AREA(ACRES) =     31.69       PEAK FLOW RATE(CFS) =      61.22

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.27; 6HR = 1.65; 24HR = 3.31

****************************************************************************
  FLOW PROCESS FROM NODE LR011511.0 TO NODE LR011512.0 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1135.00  DOWNSTREAM(FEET) =  1123.00
  FLOW LENGTH(FEET) =  1059.92   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  27.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.52
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     61.22
  PIPE TRAVEL TIME(MIN.) =   1.68    Tc(MIN.) =  24.47
  LONGEST FLOWPATH FROM NODE  11508.00 TO NODE  11512.00 =  2716.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011512.0 TO NODE LR011512.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  24.47
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.141
```



```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       62.69      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.11      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.11
  SUBAREA AREA(ACRES) =   63.80      SUBAREA RUNOFF(CFS) =  118.27
  EFFECTIVE AREA(ACRES) =     95.49   AREA-AVERAGED Fm(INCH/HR) =  0.08
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.11
  TOTAL AREA(ACRES) =     95.49       PEAK FLOW RATE(CFS) =     176.82

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.27; 6HR = 1.65; 24HR = 3.31

****************************************************************************
  FLOW PROCESS FROM NODE LR011512.0 TO NODE LR011513.0 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1123.00  DOWNSTREAM(FEET) =  1106.00
  FLOW LENGTH(FEET) =  1613.25   MANNING'S N =  0.013
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  42.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.32
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    176.82
  PIPE TRAVEL TIME(MIN.) =   2.02    Tc(MIN.) =  26.49
  LONGEST FLOWPATH FROM NODE  11508.00 TO NODE  11513.00 =  4329.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011513.0 TO NODE LR011513.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  26.49
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.042
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       92.51      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.00      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.13
  SUBAREA AREA(ACRES) =   97.51      SUBAREA RUNOFF(CFS) =  170.91
  EFFECTIVE AREA(ACRES) =    193.00   AREA-AVERAGED Fm(INCH/HR) =  0.09
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.12
  TOTAL AREA(ACRES) =    193.00       PEAK FLOW RATE(CFS) =     339.19

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.27; 6HR = 1.65; 24HR = 3.31

****************************************************************************
  FLOW PROCESS FROM NODE LR011513.0 TO NODE LR011514.0 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1106.00  DOWNSTREAM(FEET) =  1096.00
  FLOW LENGTH(FEET) =  1097.91   MANNING'S N =  0.013
  DEPTH OF FLOW IN  72.0 INCH PIPE IS  53.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.94
  ESTIMATED PIPE DIAMETER(INCH) =  72.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    339.19
  PIPE TRAVEL TIME(MIN.) =   1.23    Tc(MIN.) =  27.72
  LONGEST FLOWPATH FROM NODE  11508.00 TO NODE  11514.00 =  5427.70 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011514.0 TO NODE LR011514.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN) =  27.72
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.987
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       60.02      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.42      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.13
  SUBAREA AREA(ACRES) =   63.44      SUBAREA RUNOFF(CFS) =  108.02
  EFFECTIVE AREA(ACRES) =    256.44   AREA-AVERAGED Fm(INCH/HR) =  0.09
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.12
  TOTAL AREA(ACRES) =    256.44       PEAK FLOW RATE(CFS) =     437.72

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.00; 30M = 0.00; 1HR = 0.00; 3HR = 0.00; 6HR = 0.00; 24HR = 0.00

****************************************************************************
  FLOW PROCESS FROM NODE LR011514.0 TO NODE LR011515.0 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1096.00  DOWNSTREAM(FEET) =  1085.00
  FLOW LENGTH(FEET) =  1031.14   MANNING'S N =  0.013
  DEPTH OF FLOW IN  75.0 INCH PIPE IS  59.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.70
  ESTIMATED PIPE DIAMETER(INCH) =  75.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    437.72
  PIPE TRAVEL TIME(MIN.) =   1.03    Tc(MIN.) =  28.74
  LONGEST FLOWPATH FROM NODE  11508.00 TO NODE  11515.00 =  6458.84 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011515.0 TO NODE LR011515.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN) =  28.74
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.944
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```



```
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       35.05      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.97      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.13
  SUBAREA AREA(ACRES) =   37.02      SUBAREA RUNOFF(CFS) =   61.61
  EFFECTIVE AREA(ACRES) =    293.46   AREA-AVERAGED Fm(INCH/HR) =  0.09
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.12
  TOTAL AREA(ACRES) =    293.46       PEAK FLOW RATE(CFS) =     489.41

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.27; 6HR = 1.65; 24HR = 3.31

****************************************************************************
  FLOW PROCESS FROM NODE LR011515.0 TO NODE LR011516.0 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1085.00  DOWNSTREAM(FEET) =  1075.00
  FLOW LENGTH(FEET) =  1032.32   MANNING'S N =  0.013
  DEPTH OF FLOW IN  81.0 INCH PIPE IS  61.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.70
  ESTIMATED PIPE DIAMETER(INCH) =  81.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    489.41
  PIPE TRAVEL TIME(MIN.) =   1.03    Tc(MIN.) =  29.77
  LONGEST FLOWPATH FROM NODE  11508.00 TO NODE  11516.00 =  7491.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011516.0 TO NODE LR011516.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN) =  29.77
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.903
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       24.85      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.36      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.13
  SUBAREA AREA(ACRES) =   26.21      SUBAREA RUNOFF(CFS) =   42.67
  EFFECTIVE AREA(ACRES) =    319.67   AREA-AVERAGED Fm(INCH/HR) =  0.09
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.12
  TOTAL AREA(ACRES) =    319.67       PEAK FLOW RATE(CFS) =     521.35

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.27; 6HR = 1.65; 24HR = 3.31

****************************************************************************
  FLOW PROCESS FROM NODE LR011516.0 TO NODE LR011517.0 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
```

```
  ELEVATION DATA: UPSTREAM(FEET) =  1075.00  DOWNSTREAM(FEET) =  1062.00
  FLOW LENGTH(FEET) =  1261.29   MANNING'S N =  0.013
  DEPTH OF FLOW IN  81.0 INCH PIPE IS  63.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.27
  ESTIMATED PIPE DIAMETER(INCH) =  81.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    521.35
  PIPE TRAVEL TIME(MIN.) =   1.22    Tc(MIN.) =  30.99
  LONGEST FLOWPATH FROM NODE  11508.00 TO NODE  11517.00 =  8752.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011517.0 TO NODE LR011517.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  30.99
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.858
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       59.13      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.40      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.11
  SUBAREA AREA(ACRES) =   60.53      SUBAREA RUNOFF(CFS) =   96.67
  EFFECTIVE AREA(ACRES) =    380.20   AREA-AVERAGED Fm(INCH/HR) =  0.09
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.12
  TOTAL AREA(ACRES) =    380.20       PEAK FLOW RATE(CFS) =     605.01

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.27; 6HR = 1.65; 24HR = 3.61

****************************************************************************
  FLOW PROCESS FROM NODE LR011517.0 TO NODE LR011518.0 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1062.00  DOWNSTREAM(FEET) =  1055.00
  FLOW LENGTH(FEET) =   697.90   MANNING'S N =  0.013
  DEPTH OF FLOW IN  87.0 INCH PIPE IS  66.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.83
  ESTIMATED PIPE DIAMETER(INCH) =  87.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    605.01
  PIPE TRAVEL TIME(MIN.) =   0.65    Tc(MIN.) =  31.64
  LONGEST FLOWPATH FROM NODE  11508.00 TO NODE  11518.00 =  9450.35 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR011518.0 TO NODE LR011518.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  31.64
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.835
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       26.47      0.75      0.10    56
```



```
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.90      0.75      0.60    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       16.77      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.64
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.46
  SUBAREA AREA(ACRES) =   47.14      SUBAREA RUNOFF(CFS) =   65.23
  EFFECTIVE AREA(ACRES) =    427.34   AREA-AVERAGED Fm(INCH/HR) =  0.11
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.16
  TOTAL AREA(ACRES) =    427.34       PEAK FLOW RATE(CFS) =     662.34

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.27; 6HR = 1.65; 24HR = 3.61
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =    427.34  TC(MIN.) =     31.64
  EFFECTIVE AREA(ACRES) =    427.34  AREA-AVERAGED Fm(INCH/HR)=  0.11
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.16
  PEAK FLOW RATE(CFS)   =    662.34
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                           County of San Bernardino
                         Transportation Flood Control

                           Water Resources Division

--------------------------------------------------------------------------
  FILE NAME: LR0201ZZ.Z13
  TIME/DATE OF STUDY: 11:14 09/13/2004
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.2500

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)     (n)
===  =====  ========  =================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
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    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


**************************************************************************
  FLOW PROCESS FROM NODE LR020100.0 TO NODE LR020101.0 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   219.52
  ELEVATION DATA: UPSTREAM(FEET) =   2400.00  DOWNSTREAM(FEET) =   2385.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.474
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.755
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
        LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.33      0.61      1.00    66   10.43
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        0.04      0.86      1.00    46   10.43
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.55      0.75      0.70    56    6.47
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.80
  SUBAREA RUNOFF(CFS) =     14.81
  TOTAL AREA(ACRES) =      3.92   PEAK FLOW RATE(CFS) =     14.81

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 9.00

**************************************************************************
  FLOW PROCESS FROM NODE LR020101.0 TO NODE LR020102.0 IS CODE =  63
--------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
==========================================================================
  UPSTREAM ELEVATION(FEET) = 2385.00  DOWNSTREAM ELEVATION(FEET) = 2340.00
  STREET LENGTH(FEET) =   138.73   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
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 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.45

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      22.82
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.32
   HALFSTREET FLOOD WIDTH(FEET) =    9.84
   AVERAGE FLOW VELOCITY(FEET/SEC.) =   10.51
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.39
 STREET FLOW TRAVEL TIME(MIN.) =   0.22   Tc(MIN.) =   6.69
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.660
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               A        0.45      0.86      1.00    46
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.90      0.61      1.00    66
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        3.01      0.75      0.70    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.73
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.79
 SUBAREA AREA(ACRES) =    4.36      SUBAREA RUNOFF(CFS) =   16.02
 EFFECTIVE AREA(ACRES) =      8.28    AREA-AVERAGED Fm(INCH/HR) =  0.57
 AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.80
 TOTAL AREA(ACRES) =      8.28        PEAK FLOW RATE(CFS) =      30.50

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 8.79

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.35   HALFSTREET FLOOD WIDTH(FEET) =  11.09
 FLOW VELOCITY(FEET/SEC.) = 11.32   DEPTH*VELOCITY(FT*FT/SEC.) =   3.94
 LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20102.00 =   358.25 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020102.0 TO NODE LR020103.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2340.00  DOWNSTREAM ELEVATION(FEET) = 2320.00
 STREET LENGTH(FEET) =   287.27   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
```



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 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.64

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      42.06
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.47
   HALFSTREET FLOOD WIDTH(FEET) =   17.26
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.79
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.20
 STREET FLOW TRAVEL TIME(MIN.) =   0.70   Tc(MIN.) =   7.40
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.389
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               A        1.17      0.86      1.00    46
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        2.63      0.61      1.00    66
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        3.01      0.75      0.70    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.71
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.87
 SUBAREA AREA(ACRES) =    6.81      SUBAREA RUNOFF(CFS) =   23.12
 EFFECTIVE AREA(ACRES) =     15.09    AREA-AVERAGED Fm(INCH/HR) =  0.59
 AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.83
 TOTAL AREA(ACRES) =     15.09        PEAK FLOW RATE(CFS) =      51.59

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 8.63

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.50   HALFSTREET FLOOD WIDTH(FEET) =  18.00
 FLOW VELOCITY(FEET/SEC.) =  7.23   DEPTH*VELOCITY(FT*FT/SEC.) =   3.60
 LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20103.00 =   645.52 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020103.0 TO NODE LR020104.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2320.00  DOWNSTREAM ELEVATION(FEET) = 2310.00
 STREET LENGTH(FEET) =   249.70   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.74

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      97.01
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.64
```

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  HALFSTREET FLOOD WIDTH(FEET) =   24.79
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.45
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.74
 STREET FLOW TRAVEL TIME(MIN.) =   0.56   Tc(MIN.) =   7.96
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.201
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               A        1.82      0.86      1.00    46
 NATURAL FAIR COVER
 "OPEN BRUSH"               B       19.46      0.61      1.00    66
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        6.79      0.75      0.70    56
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         A        0.01      0.98      0.70    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.66
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.93
 SUBAREA AREA(ACRES) =   28.08      SUBAREA RUNOFF(CFS) =   90.80
 EFFECTIVE AREA(ACRES) =     43.17    AREA-AVERAGED Fm(INCH/HR) =  0.60
 AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.89
 TOTAL AREA(ACRES) =     43.17        PEAK FLOW RATE(CFS) =     139.84

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.80

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.71   HALFSTREET FLOOD WIDTH(FEET) =  28.51
 FLOW VELOCITY(FEET/SEC.) =  8.23   DEPTH*VELOCITY(FT*FT/SEC.) =   5.85
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  249.7 FT WITH ELEVATION-DROP =  10.0 FT, IS   93.9 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20104.00
 LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20104.00 =   895.22 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020104.0 TO NODE LR020105.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2310.00  DOWNSTREAM ELEVATION(FEET) = 2270.00
 STREET LENGTH(FEET) =   747.57   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.69

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     220.13
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.78
```



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  HALFSTREET FLOOD WIDTH(FEET) =   32.17
  AVERAGE FLOW VELOCITY(FEET/SEC.) =   10.27
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    8.05
 STREET FLOW TRAVEL TIME(MIN.) =   1.21   Tc(MIN.) =   9.17
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.858
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               A        5.68      0.86      1.00    46
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         A        3.92      0.98      0.70    32
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        6.10      0.75      0.70    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B       39.60      0.61      1.00    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.95
 SUBAREA AREA(ACRES) =   55.30      SUBAREA RUNOFF(CFS) =  160.45
 EFFECTIVE AREA(ACRES) =     98.47    AREA-AVERAGED Fm(INCH/HR) =  0.62
 AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     98.47        PEAK FLOW RATE(CFS) =     286.98

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.72

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.85   HALFSTREET FLOOD WIDTH(FEET) =  35.71
 FLOW VELOCITY(FEET/SEC.) = 10.94   DEPTH*VELOCITY(FT*FT/SEC.) =   9.34

 *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
        THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.69
 SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
 ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
 ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
 DEPTH OF FLOW IN  36.0 INCH PIPE IS  29.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  22.94
 PIPE-FLOW(CFS) =    139.84
 PIPEFLOW TRAVEL TIME(MIN.) =   0.54    Tc(MIN.) =   8.50
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.038
 SUBAREA AREA(ACRES) =   55.30      SUBAREA RUNOFF(CFS) =  169.40
 TOTAL AREA(ACRES) =     98.47        PEAK FLOW RATE(CFS) =    302.90

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.72
 *NOTE: STREET-CAPACITY MAY BE EXCEEDED*
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  163.06
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.71
   HALFSTREET FLOOD WIDTH(FEET) =   28.63
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.52
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.78
 LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20105.00 =  1642.79 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020105.0 TO NODE LR020106.0 IS CODE =  54
```

```
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2270.00  DOWNSTREAM(FEET) =   2230.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1238.14   CHANNEL SLOPE =  0.0323
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   3.30
  CHANNEL FLOW THRU SUBAREA(CFS) =    302.90
  FLOW VELOCITY(FEET/SEC.) =  10.67   FLOW DEPTH(FEET) =   2.72
  TRAVEL TIME(MIN.) =   1.93   Tc(MIN.) =  10.43
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20106.00 =  2880.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020106.0 TO NODE LR020106.0 IS CODE =  81
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
  MAINLINE Tc(MIN) =  10.43
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.571
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        2.42      0.86      1.00    46
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         A        7.44      0.98      0.70    32
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       21.25      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B      127.72      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.64
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.95
  SUBAREA AREA(ACRES) =  158.83      SUBAREA RUNOFF(CFS) =  423.37
  EFFECTIVE AREA(ACRES) =    257.30   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.65  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =    257.30       PEAK FLOW RATE(CFS) =     684.87

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.52

****************************************************************************
  FLOW PROCESS FROM NODE LR020106.0 TO NODE LR020107.0 IS CODE =  54
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2230.00  DOWNSTREAM(FEET) =   2170.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1330.76   CHANNEL SLOPE =  0.0451
  CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    684.87
  FLOW VELOCITY(FEET/SEC.) =  11.96   FLOW DEPTH(FEET) =   1.71
  TRAVEL TIME(MIN.) =   1.86   Tc(MIN.) =  12.29
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20107.00 =  4211.69 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020107.0 TO NODE LR020107.0 IS CODE =  81
```



```
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
  MAINLINE Tc(MIN) =  12.29
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.237
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        2.55      0.86      1.00    46
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         A       12.67      0.98      0.70    32
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       10.30      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       66.90      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.93
  SUBAREA AREA(ACRES) =   92.42      SUBAREA RUNOFF(CFS) =  217.64
  EFFECTIVE AREA(ACRES) =    349.72   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =    349.72       PEAK FLOW RATE(CFS) =     825.17

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020107.0 TO NODE LR020108.0 IS CODE =  54
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2170.00  DOWNSTREAM(FEET) =   2095.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1995.70   CHANNEL SLOPE =  0.0376
  CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    825.17
  FLOW VELOCITY(FEET/SEC.) =  12.01   FLOW DEPTH(FEET) =   2.02
  TRAVEL TIME(MIN.) =   2.77   Tc(MIN.) =  15.06
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20108.00 =  6207.39 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020108.0 TO NODE LR020108.0 IS CODE =  81
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
  MAINLINE Tc(MIN) =  15.06
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.865
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        3.92      0.86      1.00    46
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         A        0.86      0.98      0.70    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       16.85      0.98      0.60    32
  RESIDENTIAL
```

```
  "2 DWELLINGS/ACRE"         B       25.39      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       10.75      0.75      0.60    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       87.64      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.68
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.87
  SUBAREA AREA(ACRES) =  145.41      SUBAREA RUNOFF(CFS) =  297.77
  EFFECTIVE AREA(ACRES) =    495.13   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =    495.13       PEAK FLOW RATE(CFS) =    1005.97

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020108.0 TO NODE LR020109.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2095.00  DOWNSTREAM(FEET) =   2020.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2023.91   CHANNEL SLOPE =  0.0371
  CHANNEL BASE(FEET) =   40.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   1005.97
  FLOW VELOCITY(FEET/SEC.) =  11.85   FLOW DEPTH(FEET) =   1.94
  TRAVEL TIME(MIN.) =   2.85   Tc(MIN.) =  17.91
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20109.00 =  8231.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020109.0 TO NODE LR020109.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.91
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.582
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        2.81      0.86      1.00    46
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       27.06      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       26.94      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       35.77      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B      102.40      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.83
  SUBAREA AREA(ACRES) =  194.98      SUBAREA RUNOFF(CFS) =  352.41
  EFFECTIVE AREA(ACRES) =    690.11   AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.89
  TOTAL AREA(ACRES) =    690.11       PEAK FLOW RATE(CFS) =    1232.41

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
```



```
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020109.0 TO NODE LR020109.0 IS CODE =  71
----------------------------------------------------------------------------
  >>>>>PEAK FLOW RATE ESTIMATOR CHANGED TO UNIT-HYDROGRAPH METHOD<<<<<
  >>>>>USING TIME-OF-CONCENTRATION OF LONGEST FLOWPATH<<<<<
============================================================================
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.46;30M= 0.95;1H= 1.25;3H= 2.25;6H= 3.25;24H= 7.56
  S-GRAPH: VALLEY(DEV.)= 32.0%;VALLEY(UNDEV.)/DESERT= 68.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.30; LAG(HR) = 0.24; Fm(INCH/HR) = 0.60; Ybar = 0.52
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 1.00; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    690.11
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20109.00 =  8231.30 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0319; Lca/L=0.4,n=.0286; Lca/L=0.5,n=.0262;Lca/L=0.6,n=.0245
  TIME OF PEAK FLOW(HR) = 16.25  RUNOFF VOLUME(AF) =     220.14
  UNIT-HYDROGRAPH METHOD PEAK FLOW RATE(CFS) =   1127.57
  TOTAL PEAK FLOW RATE(CFS) =   1127.57 (SOURCE FLOW INCLUDED)
  RATIONAL METHOD PEAK FLOW RATE(CFS) =   1232.41
   (UPSTREAM NODE PEAK FLOW RATE(CFS) =   1232.41)
  PEAK FLOW RATE(CFS) USED =   1232.41

****************************************************************************
  FLOW PROCESS FROM NODE LR020109.0 TO NODE LR020110.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2020.00  DOWNSTREAM(FEET) =   1960.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1927.24   CHANNEL SLOPE =  0.0311
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   1232.41
  FLOW VELOCITY(FEET/SEC.) =  27.46   FLOW DEPTH(FEET) =   2.86
  TRAVEL TIME(MIN.) =   1.17   Tc(MIN.) =  19.08
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20110.00 = 10158.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020110.0 TO NODE LR020110.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  19.08
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.486
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        5.83      0.86      1.00    46
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       33.80      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       25.19      0.75      0.60    56
```

```
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        9.84      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       45.99      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.78
  SUBAREA AREA(ACRES) =  120.65
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.46;30M= 0.95;1H= 1.25;3H= 2.25;6H= 3.25;24H= 7.55
  S-GRAPH: VALLEY(DEV.)= 35.7%;VALLEY(UNDEV.)/DESERT= 64.3%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.32; LAG(HR) = 0.25; Fm(INCH/HR) = 0.59; Ybar = 0.52
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    810.76
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20110.00 = 10158.54 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0286; Lca/L=0.4,n=.0256; Lca/L=0.5,n=.0235;Lca/L=0.6,n=.0220
  TIME OF PEAK FLOW(HR) = 16.25  RUNOFF VOLUME(AF) =     258.04
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1242.23
  TOTAL AREA(ACRES) =    810.76       PEAK FLOW RATE(CFS) =    1242.23

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

********************************************************************************
  FLOW PROCESS FROM NODE LR020110.0 TO NODE LR020111.0 IS CODE =  54
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1960.00  DOWNSTREAM(FEET) =   1920.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   928.33   CHANNEL SLOPE =  0.0431
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   1242.23
  FLOW VELOCITY(FEET/SEC.) =  30.96   FLOW DEPTH(FEET) =   2.63
  TRAVEL TIME(MIN.) =   0.50   Tc(MIN.) =  19.57
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20111.00 = 11086.87 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE LR020111.0 TO NODE LR020111.0 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN) =  19.57
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.448
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                A       28.59      0.86      1.00    46
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        A       31.08      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B       31.56      0.75      0.60    56
  NATURAL FAIR COVER
```



```
  "OPEN BRUSH"                B       41.72      0.61      1.00    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"          B        5.26      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.76
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.81
  SUBAREA AREA(ACRES) =  138.21
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.46;30M= 0.95;1H= 1.25;3H= 2.23;6H= 3.22;24H= 7.55
  S-GRAPH: VALLEY(DEV.)= 37.1%;VALLEY(UNDEV.)/DESERT= 62.9%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.33; LAG(HR) = 0.26; Fm(INCH/HR) = 0.60; Ybar = 0.53
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    948.97
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20111.00 = 11086.87 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0274; Lca/L=0.4,n=.0246; Lca/L=0.5,n=.0226;Lca/L=0.6,n=.0211
  TIME OF PEAK FLOW(HR) = 16.33  RUNOFF VOLUME(AF) =     297.75
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1425.30
  TOTAL AREA(ACRES) =    948.97       PEAK FLOW RATE(CFS) =    1425.30

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.16; 6HR = 3.06; 24HR = 7.50

********************************************************************************
  FLOW PROCESS FROM NODE LR020111.0 TO NODE LR020112.0 IS CODE =  54
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1920.00  DOWNSTREAM(FEET) =   1870.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1664.97   CHANNEL SLOPE =  0.0300
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   1425.30
  FLOW VELOCITY(FEET/SEC.) =  28.26   FLOW DEPTH(FEET) =   3.11
  TRAVEL TIME(MIN.) =   0.98   Tc(MIN.) =  20.56
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20112.00 = 12751.84 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE LR020112.0 TO NODE LR020112.0 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN) =  20.56
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.377
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        A        8.51      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.54      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"          A        3.29      0.98      0.90    32
  RESIDENTIAL
  ".4 DWELLING/ACRE"          B       75.85      0.75      0.90    56
```

```
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        7.12      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.76
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.88
  SUBAREA AREA(ACRES) =   95.31
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.46;30M= 0.95;1H= 1.25;3H= 2.22;6H= 3.18;24H= 7.54
  S-GRAPH: VALLEY(DEV.)= 34.6%;VALLEY(UNDEV.)/DESERT= 65.4%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.34; LAG(HR) = 0.27; Fm(INCH/HR) = 0.61; Ybar = 0.53
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.95; 30M = 0.95; 1HR = 0.95;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1044.28
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20112.00 = 12751.84 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0257; Lca/L=0.4,n=.0231; Lca/L=0.5,n=.0212;Lca/L=0.6,n=.0198
  TIME OF PEAK FLOW(HR) = 16.33  RUNOFF VOLUME(AF) =     323.33
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1528.24
  TOTAL AREA(ACRES) =   1044.28       PEAK FLOW RATE(CFS) =    1528.24

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020112.0 TO NODE LR020150.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1870.00  DOWNSTREAM(FEET) =   1850.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   907.32   CHANNEL SLOPE =  0.0220
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   1528.24
  FLOW VELOCITY(FEET/SEC.) =  25.77   FLOW DEPTH(FEET) =   3.49
  TRAVEL TIME(MIN.) =   0.59   Tc(MIN.) =  21.14
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20150.00 = 13659.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020150.0 TO NODE LR020150.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.14
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.337
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.19      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        3.83      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.74
  SUBAREA AREA(ACRES) =    8.02
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.46;30M= 0.95;1H= 1.25;3H= 2.21;6H= 3.18;24H= 7.54
```



```
  S-GRAPH: VALLEY(DEV.)= 34.7%;VALLEY(UNDEV.)/DESERT= 65.3%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.35; LAG(HR) = 0.28; Fm(INCH/HR) = 0.60; Ybar = 0.53
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.95; 30M = 0.95; 1HR = 0.95;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1052.30
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20150.00 = 13659.16 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0250; Lca/L=0.4,n=.0224; Lca/L=0.5,n=.0206;Lca/L=0.6,n=.0192
  TIME OF PEAK FLOW(HR) = 16.33  RUNOFF VOLUME(AF) =     325.95
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1522.40
  TOTAL AREA(ACRES) =   1052.30       PEAK FLOW RATE(CFS) =    1528.24
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020150.0 TO NODE LR020150.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020120.0 TO NODE LR020121.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   591.56
  ELEVATION DATA: UPSTREAM(FEET) =   3148.00  DOWNSTREAM(FEET) =   2920.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.975
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.464
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        5.75      0.61      1.00    66   10.98
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA RUNOFF(CFS) =     14.75
  TOTAL AREA(ACRES) =      5.75   PEAK FLOW RATE(CFS) =     14.75

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020121.0 TO NODE LR020122.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2920.00  DOWNSTREAM(FEET) =   2860.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   401.18   CHANNEL SLOPE =  0.1496
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
```

```
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     14.75
  FLOW VELOCITY(FEET/SEC.) =   7.20   FLOW DEPTH(FEET) =   0.91
  TRAVEL TIME(MIN.) =   0.93   Tc(MIN.) =  11.90
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20122.00 =   992.74 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020122.0 TO NODE LR020122.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  11.90
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.299
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        6.02      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =    6.02      SUBAREA RUNOFF(CFS) =   14.55
  EFFECTIVE AREA(ACRES) =     11.77   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     11.77       PEAK FLOW RATE(CFS) =      28.44

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020122.0 TO NODE LR020123.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2860.00  DOWNSTREAM(FEET) =   2800.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   404.41   CHANNEL SLOPE =  0.1484
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     28.44
  FLOW VELOCITY(FEET/SEC.) =   8.42   FLOW DEPTH(FEET) =   1.16
  TRAVEL TIME(MIN.) =   0.80   Tc(MIN.) =  12.70
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20123.00 =  1397.15 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020123.0 TO NODE LR020123.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  12.70
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.173
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        5.11      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =    5.11      SUBAREA RUNOFF(CFS) =   11.77
```



```
  EFFECTIVE AREA(ACRES) =     16.88   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     16.88       PEAK FLOW RATE(CFS) =      38.87

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020123.0 TO NODE LR020124.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2800.00  DOWNSTREAM(FEET) =   2720.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   734.74   CHANNEL SLOPE =  0.1089
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     38.87
  FLOW VELOCITY(FEET/SEC.) =   8.12   FLOW DEPTH(FEET) =   1.38
  TRAVEL TIME(MIN.) =   1.51   Tc(MIN.) =  14.21
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20124.00 =  2131.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020124.0 TO NODE LR020124.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  14.21
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.966
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       33.25      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =   33.25      SUBAREA RUNOFF(CFS) =   70.39
  EFFECTIVE AREA(ACRES) =     50.13   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     50.13       PEAK FLOW RATE(CFS) =     106.12

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020124.0 TO NODE LR020125.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2720.00  DOWNSTREAM(FEET) =   2620.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   932.28   CHANNEL SLOPE =  0.1073
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    106.12
  FLOW VELOCITY(FEET/SEC.) =  10.36   FLOW DEPTH(FEET) =   2.02
  TRAVEL TIME(MIN.) =   1.50   Tc(MIN.) =  15.71
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20125.00 =  3064.17 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR020125.0 TO NODE LR020125.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  15.71
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.793
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       36.51      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =   36.51      SUBAREA RUNOFF(CFS) =   71.59
  EFFECTIVE AREA(ACRES) =     86.64   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     86.64       PEAK FLOW RATE(CFS) =     169.90

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020125.0 TO NODE LR020126.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2620.00  DOWNSTREAM(FEET) =   2600.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1333.93   CHANNEL SLOPE =  0.0150
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   4.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    169.90
  FLOW VELOCITY(FEET/SEC.) =   5.58   FLOW DEPTH(FEET) =   3.49
  TRAVEL TIME(MIN.) =   3.98   Tc(MIN.) =  19.70
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20126.00 =  4398.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020126.0 TO NODE LR020126.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  19.70
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.439
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       60.59      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =   60.59      SUBAREA RUNOFF(CFS) =   99.51
  EFFECTIVE AREA(ACRES) =    147.23   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    147.23       PEAK FLOW RATE(CFS) =     241.79

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
```



```
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020126.0 TO NODE LR020127.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2600.00  DOWNSTREAM(FEET) =   2420.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1404.24   CHANNEL SLOPE =  0.1282
  CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    241.79
  FLOW VELOCITY(FEET/SEC.) =  11.03   FLOW DEPTH(FEET) =   1.00
  TRAVEL TIME(MIN.) =   2.12   Tc(MIN.) =  21.82
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20127.00 =  5802.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020127.0 TO NODE LR020127.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.82
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.294
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       45.37      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =   45.37      SUBAREA RUNOFF(CFS) =   68.58
  EFFECTIVE AREA(ACRES) =    192.60   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    192.60       PEAK FLOW RATE(CFS) =     291.14

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.18; 6HR = 3.11; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020127.0 TO NODE LR020128.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2420.00  DOWNSTREAM(FEET) =   2240.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1246.58   CHANNEL SLOPE =  0.1444
  CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    291.14
  FLOW VELOCITY(FEET/SEC.) =  10.78   FLOW DEPTH(FEET) =   0.85
  TRAVEL TIME(MIN.) =   1.93   Tc(MIN.) =  23.74
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20128.00 =  7048.92 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020128.0 TO NODE LR020128.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
```

```
================================================================================
  MAINLINE Tc(MIN) =  23.74
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.180
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       27.94      0.61      1.00    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        8.51      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.64
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.93
  SUBAREA AREA(ACRES) =   36.45      SUBAREA RUNOFF(CFS) =   52.07
  EFFECTIVE AREA(ACRES) =    229.05   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.62  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    229.05       PEAK FLOW RATE(CFS) =     323.52

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

********************************************************************************
  FLOW PROCESS FROM NODE LR020128.0 TO NODE LR020129.0 IS CODE =  54
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2240.00  DOWNSTREAM(FEET) =   2120.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1393.78   CHANNEL SLOPE =  0.0861
  CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    323.52
  FLOW VELOCITY(FEET/SEC.) =   9.54   FLOW DEPTH(FEET) =   1.06
  TRAVEL TIME(MIN.) =   2.43   Tc(MIN.) =  26.18
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20129.00 =  8442.70 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE LR020129.0 TO NODE LR020129.0 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN) =  26.18
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.056
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       18.57      0.61      1.00    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B       10.38      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.65
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.89
  SUBAREA AREA(ACRES) =   28.95      SUBAREA RUNOFF(CFS) =   38.42
  EFFECTIVE AREA(ACRES) =    258.00   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.62  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    258.00       PEAK FLOW RATE(CFS) =     336.38

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50
```



```
********************************************************************************
  FLOW PROCESS FROM NODE LR020129.0 TO NODE LR020130.0 IS CODE =  54
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2120.00  DOWNSTREAM(FEET) =   1995.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2018.40   CHANNEL SLOPE =  0.0619
  CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    336.38
  FLOW VELOCITY(FEET/SEC.) =   8.71   FLOW DEPTH(FEET) =   1.19
  TRAVEL TIME(MIN.) =   3.86   Tc(MIN.) =  30.04
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20130.00 = 10461.10 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE LR020130.0 TO NODE LR020130.0 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN) =  30.04
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.893
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"          B       28.04      0.75      0.90    56
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       51.49      0.61      1.00    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B       30.71      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.68
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.89
  SUBAREA AREA(ACRES) =  110.24      SUBAREA RUNOFF(CFS) =  127.90
  EFFECTIVE AREA(ACRES) =    368.24   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.64  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =    368.24       PEAK FLOW RATE(CFS) =     426.43

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.07; 6HR = 2.84; 24HR = 7.50

********************************************************************************
  FLOW PROCESS FROM NODE LR020130.0 TO NODE LR020148.0 IS CODE =  54
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1995.00  DOWNSTREAM(FEET) =   1925.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1246.14   CHANNEL SLOPE =  0.0562
  CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    426.43
  FLOW VELOCITY(FEET/SEC.) =   9.23   FLOW DEPTH(FEET) =   1.41
  TRAVEL TIME(MIN.) =   2.25   Tc(MIN.) =  32.29
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20148.00 = 11707.24 FEET.

********************************************************************************
```

```
  FLOW PROCESS FROM NODE LR020148.0 TO NODE LR020148.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  32.29
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.813
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       19.93      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.65      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.89
  SUBAREA AREA(ACRES) =   20.58      SUBAREA RUNOFF(CFS) =   21.24
  EFFECTIVE AREA(ACRES) =    388.82   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.64  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =    388.82       PEAK FLOW RATE(CFS) =     426.43
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020148.0 TO NODE LR020148.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  32.29
  RAINFALL INTENSITY(INCH/HR) =   1.81
  AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.64
  AREA-AVERAGED Ap =  0.95
  EFFECTIVE STREAM AREA(ACRES) =   388.82
  TOTAL STREAM AREA(ACRES) =   388.82
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    426.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020140.0 TO NODE LR020141.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   823.61
  ELEVATION DATA: UPSTREAM(FEET) =   3000.00  DOWNSTREAM(FEET) =   2690.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.588
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.190
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        8.14      0.61      1.00    66   12.59
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
```



```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA RUNOFF(CFS) =     18.87
  TOTAL AREA(ACRES) =      8.14   PEAK FLOW RATE(CFS) =     18.87

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.53; 6HR = 2.22; 24HR = 4.71

****************************************************************************
  FLOW PROCESS FROM NODE LR020141.0 TO NODE LR020142.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2690.00  DOWNSTREAM(FEET) =   2560.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   610.78   CHANNEL SLOPE =  0.2128
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     18.87
  FLOW VELOCITY(FEET/SEC.) =   8.66   FLOW DEPTH(FEET) =   0.93
  TRAVEL TIME(MIN.) =   1.18   Tc(MIN.) =  13.76
  LONGEST FLOWPATH FROM NODE  20140.00 TO NODE  20142.00 =  1434.39 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020142.0 TO NODE LR020142.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  13.76
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.024
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       15.44      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =   15.44      SUBAREA RUNOFF(CFS) =   33.49
  EFFECTIVE AREA(ACRES) =     23.58   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     23.58       PEAK FLOW RATE(CFS) =      51.14

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020142.0 TO NODE LR020143.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2560.00  DOWNSTREAM(FEET) =   2420.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   771.13   CHANNEL SLOPE =  0.1816
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     51.14
  FLOW VELOCITY(FEET/SEC.) =  10.54   FLOW DEPTH(FEET) =   1.39
  TRAVEL TIME(MIN.) =   1.22   Tc(MIN.) =  14.98
  LONGEST FLOWPATH FROM NODE  20140.00 TO NODE  20143.00 =  2205.52 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR020143.0 TO NODE LR020143.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  14.98
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.874
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       22.70      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =   22.70      SUBAREA RUNOFF(CFS) =   46.16
  EFFECTIVE AREA(ACRES) =     46.28   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     46.28       PEAK FLOW RATE(CFS) =      94.12

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020143.0 TO NODE LR020144.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2420.00  DOWNSTREAM(FEET) =   2240.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1310.58   CHANNEL SLOPE =  0.1373
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     94.12
  FLOW VELOCITY(FEET/SEC.) =  11.01   FLOW DEPTH(FEET) =   1.85
  TRAVEL TIME(MIN.) =   1.98   Tc(MIN.) =  16.97
  LONGEST FLOWPATH FROM NODE  20140.00 TO NODE  20144.00 =  3516.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020144.0 TO NODE LR020144.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  16.97
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.667
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       61.27      0.61      1.00    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       11.25      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.63
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.98
  SUBAREA AREA(ACRES) =   72.52      SUBAREA RUNOFF(CFS) =  133.40
  EFFECTIVE AREA(ACRES) =    118.80   AREA-AVERAGED Fm(INCH/HR) =  0.62
  AREA-AVERAGED Fp(INCH/HR) =  0.63  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    118.80       PEAK FLOW RATE(CFS) =     218.91
```



```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020144.0 TO NODE LR020145.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2240.00  DOWNSTREAM(FEET) =   2150.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1185.29   CHANNEL SLOPE =  0.0759
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.50
  CHANNEL FLOW THRU SUBAREA(CFS) =    218.91
  FLOW VELOCITY(FEET/SEC.) =  11.15   FLOW DEPTH(FEET) =   2.12
  TRAVEL TIME(MIN.) =   1.77   Tc(MIN.) =  18.74
  LONGEST FLOWPATH FROM NODE  20140.00 TO NODE  20145.00 =  4701.39 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020145.0 TO NODE LR020145.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  18.74
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.513
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       27.90      0.61      1.00    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       18.45      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.66
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.96
  SUBAREA AREA(ACRES) =   46.35      SUBAREA RUNOFF(CFS) =   78.22
  EFFECTIVE AREA(ACRES) =    165.15   AREA-AVERAGED Fm(INCH/HR) =  0.62
  AREA-AVERAGED Fp(INCH/HR) =  0.64  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    165.15       PEAK FLOW RATE(CFS) =     280.63

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.15; 6HR = 3.04; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020145.0 TO NODE LR020146.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2150.00  DOWNSTREAM(FEET) =   2065.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1106.66   CHANNEL SLOPE =  0.0768
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    280.63
  FLOW VELOCITY(FEET/SEC.) =  11.94   FLOW DEPTH(FEET) =   2.40
  TRAVEL TIME(MIN.) =   1.54   Tc(MIN.) =  20.28
  LONGEST FLOWPATH FROM NODE  20140.00 TO NODE  20146.00 =  5808.05 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR020146.0 TO NODE LR020146.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  20.28
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.396
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        5.66      0.61      1.00    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       28.22      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.72
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.92
  SUBAREA AREA(ACRES) =   33.88      SUBAREA RUNOFF(CFS) =   52.84
  EFFECTIVE AREA(ACRES) =    199.03   AREA-AVERAGED Fm(INCH/HR) =  0.63
  AREA-AVERAGED Fp(INCH/HR) =  0.65  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    199.03       PEAK FLOW RATE(CFS) =     316.14

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020146.0 TO NODE LR020147.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2065.00  DOWNSTREAM(FEET) =   1980.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1084.55   CHANNEL SLOPE =  0.0784
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    316.14
  FLOW VELOCITY(FEET/SEC.) =  12.43   FLOW DEPTH(FEET) =   2.53
  TRAVEL TIME(MIN.) =   1.45   Tc(MIN.) =  21.74
  LONGEST FLOWPATH FROM NODE  20140.00 TO NODE  20147.00 =  6892.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020147.0 TO NODE LR020147.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.74
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.299
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       15.70      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.90
  SUBAREA AREA(ACRES) =   15.70      SUBAREA RUNOFF(CFS) =   22.97
  EFFECTIVE AREA(ACRES) =    214.73   AREA-AVERAGED Fm(INCH/HR) =  0.63
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    214.73       PEAK FLOW RATE(CFS) =     321.65
```



```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020147.0 TO NODE LR020148.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1980.00  DOWNSTREAM(FEET) =   1925.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   934.91   CHANNEL SLOPE =  0.0588
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    321.65
  FLOW VELOCITY(FEET/SEC.) =  11.24   FLOW DEPTH(FEET) =   2.73
  TRAVEL TIME(MIN.) =   1.39   Tc(MIN.) =  23.12
  LONGEST FLOWPATH FROM NODE  20140.00 TO NODE  20148.00 =  7827.51 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020148.0 TO NODE LR020148.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  23.12
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.215
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       14.97      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.90
  SUBAREA AREA(ACRES) =   14.97      SUBAREA RUNOFF(CFS) =   20.77
  EFFECTIVE AREA(ACRES) =    229.70   AREA-AVERAGED Fm(INCH/HR) =  0.64
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.96
  TOTAL AREA(ACRES) =    229.70       PEAK FLOW RATE(CFS) =     326.24

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020148.0 TO NODE LR020148.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  23.12
  RAINFALL INTENSITY(INCH/HR) =   2.21
  AREA-AVERAGED Fm(INCH/HR) =  0.64
  AREA-AVERAGED Fp(INCH/HR) =  0.66
  AREA-AVERAGED Ap =  0.96
  EFFECTIVE STREAM AREA(ACRES) =   229.70
  TOTAL STREAM AREA(ACRES) =   229.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    326.24

  ** CONFLUENCE DATA **
```

```
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
    1    426.43  32.29    1.813  0.64( 0.61) 0.95   388.8 LR020120.0
    2    326.24  23.12    2.215  0.66( 0.64) 0.96   229.7 LR020140.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
    1    733.66  23.12    2.215  0.65( 0.62) 0.95   508.1 LR020140.0
    2    669.52  32.29    1.813  0.65( 0.62) 0.95   618.5 LR020120.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    733.66    Tc(MIN.) =    23.12
  EFFECTIVE AREA(ACRES) =   508.11   AREA-AVERAGED Fm(INCH/HR) =  0.62
  AREA-AVERAGED Fp(INCH/HR) =  0.65  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =    618.52
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20148.00 = 11707.24 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020148.0 TO NODE LR020149.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1925.00  DOWNSTREAM(FEET) =   1900.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   764.60   CHANNEL SLOPE =  0.0327
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    733.66
  FLOW VELOCITY(FEET/SEC.) =  10.95   FLOW DEPTH(FEET) =   3.80
  TRAVEL TIME(MIN.) =   1.16   Tc(MIN.) =  24.29
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20149.00 = 12471.84 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020149.0 TO NODE LR020149.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  24.29
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.151
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       20.34      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.62      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.89
  SUBAREA AREA(ACRES) =   20.96      SUBAREA RUNOFF(CFS) =   28.00
  EFFECTIVE AREA(ACRES) =    529.07   AREA-AVERAGED Fm(INCH/HR) =  0.62
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =    639.48       PEAK FLOW RATE(CFS) =     733.66
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
```



```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020149.0 TO NODE LR020150.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1900.00  DOWNSTREAM(FEET) =   1850.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1212.57   CHANNEL SLOPE =  0.0412
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    733.66
  FLOW VELOCITY(FEET/SEC.) =  11.90   FLOW DEPTH(FEET) =   3.59
  TRAVEL TIME(MIN.) =   1.70   Tc(MIN.) =  25.99
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20150.00 = 13684.41 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020150.0 TO NODE LR020150.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  25.99
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.065
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        8.58      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.10      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.90
  SUBAREA AREA(ACRES) =    8.68      SUBAREA RUNOFF(CFS) =   10.89
  EFFECTIVE AREA(ACRES) =    537.75   AREA-AVERAGED Fm(INCH/HR) =  0.62
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =    648.16       PEAK FLOW RATE(CFS) =     733.66
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.00; 30M = 0.00; 1HR = 0.00; 3HR = 0.00; 6HR = 0.00; 24HR = 0.00

****************************************************************************
  FLOW PROCESS FROM NODE LR020150.0 TO NODE LR020150.0 IS CODE =  71
----------------------------------------------------------------------------
  >>>>>PEAK FLOW RATE ESTIMATOR CHANGED TO UNIT-HYDROGRAPH METHOD<<<<<
  >>>>>USING TIME-OF-CONCENTRATION OF LONGEST FLOWPATH<<<<<
============================================================================
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.93;1H= 1.23;3H= 2.11;6H= 2.97;24H= 7.36
  S-GRAPH: VALLEY(DEV.)=  7.9%;VALLEY(UNDEV.)/DESERT= 92.1%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.59; LAG(HR) = 0.47; Fm(INCH/HR) = 0.62; Ybar = 0.54
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 1.00; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    648.16
```

```
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20150.00 = 13684.41 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0489; Lca/L=0.4,n=.0438; Lca/L=0.5,n=.0402;Lca/L=0.6,n=.0375
  TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     193.60
  UNIT-HYDROGRAPH METHOD PEAK FLOW RATE(CFS) =    641.06
  TOTAL PEAK FLOW RATE(CFS) =    641.06 (SOURCE FLOW INCLUDED)
  RATIONAL METHOD PEAK FLOW RATE(CFS) =    733.66
   (UPSTREAM NODE PEAK FLOW RATE(CFS) =    733.66)
  PEAK FLOW RATE(CFS) USED =    733.66

****************************************************************************
  FLOW PROCESS FROM NODE LR020150.0 TO NODE LR020150.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =      733.66    Tc(MIN.) =  35.23
  AREA-AVERAGED Fm(INCH/HR) =  0.62    Ybar = 0.54
  TOTAL AREA(ACRES) =     648.16
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20150.00 = 13684.41 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     1528.24    Tc(MIN.) =  21.14
  AREA-AVERAGED Fm(INCH/HR) =  0.60    Ybar = 0.53
  TOTAL AREA(ACRES) =    1052.30
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20150.00 = 13659.16 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.46;30M= 0.94;1H= 1.24;3H= 2.17;6H= 3.10;24H= 7.47
  S-GRAPH: VALLEY(DEV.)= 24.5%;VALLEY(UNDEV.)/DESERT= 75.5%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.59; LAG(HR) = 0.47; Fm(INCH/HR) = 0.61; Ybar = 0.54
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.92; 30M = 0.92; 1HR = 0.92;
  3HR = 0.99; 6HR = 0.99; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1700.46
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20150.00 = 13684.41 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0489; Lca/L=0.4,n=.0438; Lca/L=0.5,n=.0402;Lca/L=0.6,n=.0375
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     516.55
  PEAK FLOW RATE(CFS) =    1651.10

****************************************************************************
  FLOW PROCESS FROM NODE LR020150.0 TO NODE LR020150.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020150.0 TO NODE LR020151.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1850.00  DOWNSTREAM(FEET) =   1785.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1753.77   CHANNEL SLOPE =  0.0371
```



```
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   1651.10
  FLOW VELOCITY(FEET/SEC.) =  31.76   FLOW DEPTH(FEET) =   3.18
  TRAVEL TIME(MIN.) =   0.92   Tc(MIN.) =  36.15
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20151.00 = 15438.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020151.0 TO NODE LR020151.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  36.15
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.694
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       24.58      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.90
  SUBAREA AREA(ACRES) =   24.58
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.46;30M= 0.94;1H= 1.24;3H= 2.17;6H= 3.09;24H= 7.47
  S-GRAPH: VALLEY(DEV.)= 24.1%;VALLEY(UNDEV.)/DESERT= 75.9%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.60; LAG(HR) = 0.48; Fm(INCH/HR) = 0.61; Ybar = 0.54
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.92; 30M = 0.92; 1HR = 0.92;
  3HR = 0.99; 6HR = 0.99; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1725.04
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20151.00 = 15438.18 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0451; Lca/L=0.4,n=.0405; Lca/L=0.5,n=.0372;Lca/L=0.6,n=.0347
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     522.82
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1648.64
  TOTAL AREA(ACRES) =   1725.04       PEAK FLOW RATE(CFS) =    1651.10
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.33

****************************************************************************
  FLOW PROCESS FROM NODE LR020151.0 TO NODE LR020151.0 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20151.DNA
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =   1725.04  TC(MIN.) =     36.15
  AREA-AVERAGED Fm(INCH/HR)=  0.61   Ybar =  0.54
  PEAK FLOW RATE(CFS)   =   1651.10
============================================================================
============================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

```
******************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
         (c) Copyright 1983-2002 Advanced Engineering Software (aes)
             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                           County of San Bernardino
                         Transportation Flood Control

                          Water Resources Division

------------------------------------------------------------------------------
  FILE NAME: LR0202ZZ.Z13
  TIME/DATE OF STUDY: 11:15 09/13/2004
==============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.2500

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  =================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
```



```
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


******************************************************************************
  FLOW PROCESS FROM NODE LR020200.0 TO NODE LR020201.0 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   508.83
  ELEVATION DATA: UPSTREAM(FEET) =   1945.00  DOWNSTREAM(FEET) =   1935.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.936
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.471
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        4.64      0.98       0.60    32   10.94
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     12.05
  TOTAL AREA(ACRES) =      4.64   PEAK FLOW RATE(CFS) =     12.05

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.12; 6HR = 2.96; 24HR = 7.50

******************************************************************************
  FLOW PROCESS FROM NODE LR020201.0 TO NODE LR020202.0 IS CODE =  92
------------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
==============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1935.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1930.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   620.72
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.961
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        6.32      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     18.81
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.12
  AVERAGE FLOW DEPTH(FEET) =   0.63   FLOOD WIDTH(FEET) =   35.63
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   3.32   Tc(MIN.) =  14.25
  SUBAREA AREA(ACRES) =    6.32       SUBAREA RUNOFF(CFS) =   13.51
  EFFECTIVE AREA(ACRES) =   10.96     AREA-AVERAGED Fm(INCH/HR) =   0.59
  AREA-AVERAGED Fp(INCH/HR) =   0.98  AREA-AVERAGED Ap =   0.60
  TOTAL AREA(ACRES) =     10.96         PEAK FLOW RATE(CFS) =      23.44

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.76; 24HR = 7.50

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.66   FLOOD WIDTH(FEET) =   39.52
  FLOW VELOCITY(FEET/SEC.) =   3.22   DEPTH*VELOCITY(FT*FT/SEC) =   2.13
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20202.00 =  1129.55 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020202.0 TO NODE LR020203.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1930.00  DOWNSTREAM ELEVATION(FEET) = 1910.00
  STREET LENGTH(FEET) =   369.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.76

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      34.88
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.49
    HALFSTREET FLOOD WIDTH(FEET) =   16.57
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.94
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.91
  STREET FLOW TRAVEL TIME(MIN.) =   1.04   Tc(MIN.) =  15.29
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.839
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       11.02      0.98      0.60    32
  MOBILE HOME PARK           A        0.23      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.59
  SUBAREA AREA(ACRES) =   11.25      SUBAREA RUNOFF(CFS) =   22.89
```



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  EFFECTIVE AREA(ACRES) =     22.21    AREA-AVERAGED Fm(INCH/HR) =  0.58
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     22.21        PEAK FLOW RATE(CFS) =      45.12

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.53   HALFSTREET FLOOD WIDTH(FEET) =  18.37
  FLOW VELOCITY(FEET/SEC.) =  6.33   DEPTH*VELOCITY(FT*FT/SEC.) =   3.33
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20203.00 =  1499.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020203.0 TO NODE LR020204.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1910.00  DOWNSTREAM ELEVATION(FEET) = 1895.00
  STREET LENGTH(FEET) =   418.06   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      58.61
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.60
    HALFSTREET FLOOD WIDTH(FEET) =   22.12
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.77
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.46
  STREET FLOW TRAVEL TIME(MIN.) =   1.21   Tc(MIN.) =  16.50
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.712
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        6.00      0.98      0.60    32
  MOBILE HOME PARK           A        6.97      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.41
  SUBAREA AREA(ACRES) =   12.97      SUBAREA RUNOFF(CFS) =   26.97
  EFFECTIVE AREA(ACRES) =     35.18    AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.53
  TOTAL AREA(ACRES) =     35.18        PEAK FLOW RATE(CFS) =      69.56

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.63   HALFSTREET FLOOD WIDTH(FEET) =  23.68
```

```
  FLOW VELOCITY(FEET/SEC.) =  6.00   DEPTH*VELOCITY(FT*FT/SEC.) =   3.79
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20204.00 =  1917.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020204.0 TO NODE LR020205.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1895.00  DOWNSTREAM ELEVATION(FEET) = 1875.00
  STREET LENGTH(FEET) =   555.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      86.00
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.67
    HALFSTREET FLOOD WIDTH(FEET) =   26.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.32
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.25
  STREET FLOW TRAVEL TIME(MIN.) =   1.46   Tc(MIN.) =  17.96
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.577
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        8.31      0.98      0.60    32
  MOBILE HOME PARK           A        8.55      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.42
  SUBAREA AREA(ACRES) =   16.86      SUBAREA RUNOFF(CFS) =   32.86
  EFFECTIVE AREA(ACRES) =     52.04    AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.49
  TOTAL AREA(ACRES) =     52.04        PEAK FLOW RATE(CFS) =      98.16

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.70   HALFSTREET FLOOD WIDTH(FEET) =  28.66
  FLOW VELOCITY(FEET/SEC.) =  6.52   DEPTH*VELOCITY(FT*FT/SEC.) =   4.56
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20205.00 =  2472.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020205.0 TO NODE LR020206.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
```



```
  UPSTREAM ELEVATION(FEET) = 1875.00  DOWNSTREAM ELEVATION(FEET) = 1855.00
  STREET LENGTH(FEET) =   568.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     104.12
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.71
    HALFSTREET FLOOD WIDTH(FEET) =   30.06
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.56
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.68
  STREET FLOW TRAVEL TIME(MIN.) =   1.44   Tc(MIN.) =  19.41
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.461
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A        4.58      0.98      0.25    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.65      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.34
  SUBAREA AREA(ACRES) =    6.23      SUBAREA RUNOFF(CFS) =   11.92
  EFFECTIVE AREA(ACRES) =     58.27    AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.48
  TOTAL AREA(ACRES) =     58.27        PEAK FLOW RATE(CFS) =     104.61

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.71   HALFSTREET FLOOD WIDTH(FEET) =  30.22
  FLOW VELOCITY(FEET/SEC.) =  6.55   DEPTH*VELOCITY(FT*FT/SEC.) =   4.68
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20206.00 =  3040.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020206.0 TO NODE LR020214.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1855.00  DOWNSTREAM ELEVATION(FEET) = 1840.00
  STREET LENGTH(FEET) =   411.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
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  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.83

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     106.73
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.71
    HALFSTREET FLOOD WIDTH(FEET) =   30.22
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.68
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.78
  STREET FLOW TRAVEL TIME(MIN.) =   1.03   Tc(MIN.) =  20.43
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.386
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A        1.68      0.98      0.25    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.62      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.34
  SUBAREA AREA(ACRES) =    2.30      SUBAREA RUNOFF(CFS) =    4.24
  EFFECTIVE AREA(ACRES) =     60.57    AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.47
  TOTAL AREA(ACRES) =     60.57        PEAK FLOW RATE(CFS) =     104.93

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.46

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.71   HALFSTREET FLOOD WIDTH(FEET) =  29.91
  FLOW VELOCITY(FEET/SEC.) =  6.65   DEPTH*VELOCITY(FT*FT/SEC.) =   4.73
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20214.00 =  3451.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020214.0 TO NODE LR020214.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  20.43
  RAINFALL INTENSITY(INCH/HR) =   2.39
  AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.97
  AREA-AVERAGED Ap =  0.47
  EFFECTIVE STREAM AREA(ACRES) =    60.57
  TOTAL STREAM AREA(ACRES) =    60.57
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    104.93

****************************************************************************
  FLOW PROCESS FROM NODE LR020210.0 TO NODE LR020211.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   940.61
  ELEVATION DATA: UPSTREAM(FEET) =   1875.00  DOWNSTREAM(FEET) =   1850.00
```



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  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.163
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.106
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        7.95      0.98      0.60    32   13.16
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     18.04
  TOTAL AREA(ACRES) =      7.95   PEAK FLOW RATE(CFS) =     18.04

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.29

****************************************************************************
  FLOW PROCESS FROM NODE LR020211.0 TO NODE LR020212.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1850.00  DOWNSTREAM ELEVATION(FEET) = 1846.00
  STREET LENGTH(FEET) =   247.17   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      23.83
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.49
    HALFSTREET FLOOD WIDTH(FEET) =   18.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.43
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.69
  STREET FLOW TRAVEL TIME(MIN.) =   1.20   Tc(MIN.) =  14.37
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.947
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        4.82      0.98      0.60    32
  MOBILE HOME PARK           A        0.55      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.56
  SUBAREA AREA(ACRES) =    5.37      SUBAREA RUNOFF(CFS) =   11.59
  EFFECTIVE AREA(ACRES) =     13.32    AREA-AVERAGED Fm(INCH/HR) =  0.57
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.59
  TOTAL AREA(ACRES) =     13.32        PEAK FLOW RATE(CFS) =      28.49
```

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  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.30

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.51   HALFSTREET FLOOD WIDTH(FEET) =  18.69
  FLOW VELOCITY(FEET/SEC.) =  3.69   DEPTH*VELOCITY(FT*FT/SEC.) =   1.90
  LONGEST FLOWPATH FROM NODE  20210.00 TO NODE  20212.00 =  1187.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020212.0 TO NODE LR020213.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1846.00  DOWNSTREAM ELEVATION(FEET) = 1843.00
  STREET LENGTH(FEET) =   253.21   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      34.57
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.56
    HALFSTREET FLOOD WIDTH(FEET) =   21.19
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.56
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.01
  STREET FLOW TRAVEL TIME(MIN.) =   1.19   Tc(MIN.) =  15.55
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.810
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        2.35      0.98      0.60    32
  MOBILE HOME PARK           A        3.23      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
  SUBAREA AREA(ACRES) =    5.58      SUBAREA RUNOFF(CFS) =   12.17
  EFFECTIVE AREA(ACRES) =     18.90    AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.53
  TOTAL AREA(ACRES) =     18.90        PEAK FLOW RATE(CFS) =      39.01

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.33

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.58   HALFSTREET FLOOD WIDTH(FEET) =  22.10
  FLOW VELOCITY(FEET/SEC.) =  3.71   DEPTH*VELOCITY(FT*FT/SEC.) =   2.16
  LONGEST FLOWPATH FROM NODE  20210.00 TO NODE  20213.00 =  1440.99 FEET.
```



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****************************************************************************
  FLOW PROCESS FROM NODE LR020213.0 TO NODE LR020214.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1843.00  DOWNSTREAM ELEVATION(FEET) = 1840.00
  STREET LENGTH(FEET) =   294.25   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      41.41
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.61
    HALFSTREET FLOOD WIDTH(FEET) =   23.26
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.58
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.17
  STREET FLOW TRAVEL TIME(MIN.) =   1.37   Tc(MIN.) =  16.92
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.672
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.63      0.98      0.60    32
  MOBILE HOME PARK           A        1.65      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.35
  SUBAREA AREA(ACRES) =    2.28      SUBAREA RUNOFF(CFS) =    4.79
  EFFECTIVE AREA(ACRES) =     21.18    AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.51
  TOTAL AREA(ACRES) =     21.18        PEAK FLOW RATE(CFS) =      41.44

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.99

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.61   HALFSTREET FLOOD WIDTH(FEET) =  23.26
  FLOW VELOCITY(FEET/SEC.) =  3.59   DEPTH*VELOCITY(FT*FT/SEC.) =   2.17
  LONGEST FLOWPATH FROM NODE  20210.00 TO NODE  20214.00 =  1735.24 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020214.0 TO NODE LR020214.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
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  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  16.92
  RAINFALL INTENSITY(INCH/HR) =   2.67
  AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.98
  AREA-AVERAGED Ap =  0.51
  EFFECTIVE STREAM AREA(ACRES) =    21.18
  TOTAL STREAM AREA(ACRES) =    21.18
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     41.44

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    104.93  20.43    2.386  0.97( 0.46) 0.47    60.6 LR020200.0
      2     41.44  16.92    2.672  0.98( 0.50) 0.51    21.2 LR020210.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    141.24  16.92    2.672  0.98( 0.47) 0.48    71.3 LR020210.0
      2    140.92  20.43    2.386  0.97( 0.47) 0.48    81.8 LR020200.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    141.24    Tc(MIN.) =    16.92
  EFFECTIVE AREA(ACRES) =    71.34   AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.48
  TOTAL AREA(ACRES) =     81.75
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20214.00 =  3451.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020214.0 TO NODE LR020215.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1840.00  DOWNSTREAM ELEVATION(FEET) = 1793.00
  STREET LENGTH(FEET) =  1205.58   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.82

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     176.88
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.82
    HALFSTREET FLOOD WIDTH(FEET) =   39.53
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.62
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    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.23
  STREET FLOW TRAVEL TIME(MIN.) =   2.64   Tc(MIN.) =  19.56
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.449
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       18.86      0.98      0.60    32
  MOBILE HOME PARK           A       19.95      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.42
  SUBAREA AREA(ACRES) =   38.81      SUBAREA RUNOFF(CFS) =   71.25
  EFFECTIVE AREA(ACRES) =    110.15    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.46
  TOTAL AREA(ACRES) =    120.56        PEAK FLOW RATE(CFS) =     198.21

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.84   HALFSTREET FLOOD WIDTH(FEET) =  40.69
  FLOW VELOCITY(FEET/SEC.) =  7.91   DEPTH*VELOCITY(FT*FT/SEC.) =   6.65

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.82
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.10
  PIPE-FLOW(CFS) =     41.18
  PIPEFLOW TRAVEL TIME(MIN.) =   1.53    Tc(MIN.) =  18.45
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.536
  SUBAREA AREA(ACRES) =   38.81      SUBAREA RUNOFF(CFS) =   74.27
  TOTAL AREA(ACRES) =    120.56        PEAK FLOW RATE(CFS) =    206.80

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  165.63
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.80
    HALFSTREET FLOOD WIDTH(FEET) =   38.85
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.48
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.01

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    206.80  18.45    2.536  0.97( 0.45) 0.46   110.2 LR020210.0
      2    198.94  21.97    2.284  0.98( 0.45) 0.46   120.6 LR020200.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    206.80  Tc(MIN.) =  18.45
  AREA-AVERAGED Fm(INCH/HR) =  0.45  AREA-AVERAGED Fp(INCH/HR) =  0.97
  AREA-AVERAGED Ap =  0.46  EFFECTIVE AREA(ACRES) =    110.15
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20215.00 =  4656.69 FEET.
```

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****************************************************************************
  FLOW PROCESS FROM NODE LR020215.0 TO NODE LR020216.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1793.00  DOWNSTREAM ELEVATION(FEET) = 1740.00
  STREET LENGTH(FEET) =  1725.28   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     247.43
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.92
    HALFSTREET FLOOD WIDTH(FEET) =   44.53
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.83
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.18
  STREET FLOW TRAVEL TIME(MIN.) =   3.67   Tc(MIN.) =  22.13
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.274
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       24.17      0.98      0.60    32
  SCHOOL                     A        9.62      0.98      0.60    32
  MOBILE HOME PARK           A       14.92      0.98      0.25    32
  COMMERCIAL                 A        0.89      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.13      0.75      0.60    56
  COMMERCIAL                 B        0.31      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.48
  SUBAREA AREA(ACRES) =   50.04      SUBAREA RUNOFF(CFS) =   81.21
  EFFECTIVE AREA(ACRES) =    160.19    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =    170.60        PEAK FLOW RATE(CFS) =     257.74

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.93   HALFSTREET FLOOD WIDTH(FEET) =  45.08
  FLOW VELOCITY(FEET/SEC.) =  7.91   DEPTH*VELOCITY(FT*FT/SEC.) =   7.34

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.87
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
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  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.38
  PIPE-FLOW(CFS) =     85.46
  PIPEFLOW TRAVEL TIME(MIN.) =   2.00    Tc(MIN.) =  20.45
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.384
  SUBAREA AREA(ACRES) =   50.04      SUBAREA RUNOFF(CFS) =   86.16
  TOTAL AREA(ACRES) =    170.60        PEAK FLOW RATE(CFS) =    273.59

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  188.13
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.85
    HALFSTREET FLOOD WIDTH(FEET) =   41.36
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.19
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.14

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    277.91  20.45    2.384  0.97( 0.46) 0.47   160.2 LR020210.0
      2    261.64  24.10    2.161  0.97( 0.46) 0.47   170.6 LR020200.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    277.91  Tc(MIN.) =  20.45
  AREA-AVERAGED Fm(INCH/HR) =  0.46  AREA-AVERAGED Fp(INCH/HR) =  0.97
  AREA-AVERAGED Ap =  0.47  EFFECTIVE AREA(ACRES) =    160.19
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20216.00 =  6381.97 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020216.0 TO NODE LR020232.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1740.00  DOWNSTREAM ELEVATION(FEET) = 1739.00
  STREET LENGTH(FEET) =  1052.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     286.38
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.66
    HALFSTREET FLOOD WIDTH(FEET) =   81.82
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.28
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.78
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  STREET FLOW TRAVEL TIME(MIN.) =   7.71   Tc(MIN.) =  28.16
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.968
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A        0.63      0.98      0.25    32
  COMMERCIAL                 B        1.46      0.75      0.10    56
  MOBILE HOME PARK           B        4.91      0.75      0.25    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.10      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.76
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.36
  SUBAREA AREA(ACRES) =   11.10      SUBAREA RUNOFF(CFS) =   16.94
  EFFECTIVE AREA(ACRES) =    171.29    AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.96  AREA-AVERAGED Ap =  0.49
  TOTAL AREA(ACRES) =    181.70        PEAK FLOW RATE(CFS) =     277.91
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.65   HALFSTREET FLOOD WIDTH(FEET) =  80.97
  FLOW VELOCITY(FEET/SEC.) =  2.26   DEPTH*VELOCITY(FT*FT/SEC.) =   3.72

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 1.07
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  90.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.94
  PIPE-FLOW(CFS) =    218.34
  PIPEFLOW TRAVEL TIME(MIN.) =   3.55    Tc(MIN.) =  24.01
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.166
  SUBAREA AREA(ACRES) =   11.10      SUBAREA RUNOFF(CFS) =   18.92
  TOTAL AREA(ACRES) =    181.70        PEAK FLOW RATE(CFS) =    277.91
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   59.57
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.00
    HALFSTREET FLOOD WIDTH(FEET) =   48.74
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.51
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.51
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20232.00 =  7433.97 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020232.0 TO NODE LR020232.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
```



```
  TIME OF CONCENTRATION(MIN.) =  24.01
  RAINFALL INTENSITY(INCH/HR) =   2.17
  AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.96
  AREA-AVERAGED Ap =  0.49
  EFFECTIVE STREAM AREA(ACRES) =   171.29
  TOTAL STREAM AREA(ACRES) =   181.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    277.91

****************************************************************************
  FLOW PROCESS FROM NODE LR020220.0 TO NODE LR020221.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   598.74
  ELEVATION DATA: UPSTREAM(FEET) =   1935.00  DOWNSTREAM(FEET) =   1925.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.057
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.274
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        5.11      0.98      0.60    32   12.06
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     12.37
  TOTAL AREA(ACRES) =      5.11   PEAK FLOW RATE(CFS) =     12.37

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020221.0 TO NODE LR020222.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1925.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1915.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   551.44
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.978
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        5.86      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     18.67
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.46
  AVERAGE FLOW DEPTH(FEET) =   0.57   FLOOD WIDTH(FEET) =   28.91
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   2.06   Tc(MIN.) =  14.12
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  SUBAREA AREA(ACRES) =    5.86       SUBAREA RUNOFF(CFS) =   12.62
  EFFECTIVE AREA(ACRES) =   10.97     AREA-AVERAGED Fm(INCH/HR) =   0.59
  AREA-AVERAGED Fp(INCH/HR) =   0.98  AREA-AVERAGED Ap =   0.60
  TOTAL AREA(ACRES) =     10.97         PEAK FLOW RATE(CFS) =      23.63

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.60   FLOOD WIDTH(FEET) =   32.65
  FLOW VELOCITY(FEET/SEC.) =   4.57   DEPTH*VELOCITY(FT*FT/SEC) =   2.75
  LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20222.00 =  1150.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020222.0 TO NODE LR020223.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1915.00  DOWNSTREAM ELEVATION(FEET) = 1905.00
  STREET LENGTH(FEET) =   354.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.82

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      34.90
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.51
    HALFSTREET FLOOD WIDTH(FEET) =   18.26
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.72
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.38
  STREET FLOW TRAVEL TIME(MIN.) =   1.25   Tc(MIN.) =  15.37
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.830
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       11.15      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   11.15      SUBAREA RUNOFF(CFS) =   22.53
  EFFECTIVE AREA(ACRES) =     22.12    AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     22.12        PEAK FLOW RATE(CFS) =      44.69

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
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  DEPTH(FEET) = 0.54   HALFSTREET FLOOD WIDTH(FEET) =  19.85
  FLOW VELOCITY(FEET/SEC.) =  5.19   DEPTH*VELOCITY(FT*FT/SEC.) =   2.79
  LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20223.00 =  1504.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020223.0 TO NODE LR020224.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1905.00  DOWNSTREAM ELEVATION(FEET) = 1895.00
  STREET LENGTH(FEET) =   253.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.74

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      52.32
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.54
    HALFSTREET FLOOD WIDTH(FEET) =   19.78
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.11
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.27
  STREET FLOW TRAVEL TIME(MIN.) =   0.69   Tc(MIN.) =  16.06
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.756
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A        2.51      0.98      0.25    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        4.90      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.48
  SUBAREA AREA(ACRES) =    7.41      SUBAREA RUNOFF(CFS) =   15.25
  EFFECTIVE AREA(ACRES) =     29.53    AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.57
  TOTAL AREA(ACRES) =     29.53        PEAK FLOW RATE(CFS) =      58.48

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.55   HALFSTREET FLOOD WIDTH(FEET) =  20.58
  FLOW VELOCITY(FEET/SEC.) =  6.36   DEPTH*VELOCITY(FT*FT/SEC.) =   3.51
  LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20224.00 =  1757.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020224.0 TO NODE LR020225.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
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  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) = 1895.00  DOWNSTREAM ELEVATION(FEET) = 1885.00
  STREET LENGTH(FEET) =   323.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.80

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      68.27
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.60
    HALFSTREET FLOOD WIDTH(FEET) =   22.78
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.15
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.66
  STREET FLOW TRAVEL TIME(MIN.) =   0.88   Tc(MIN.) =  16.94
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.670
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A        3.70      0.98      0.25    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        6.13      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.47
  SUBAREA AREA(ACRES) =    9.83      SUBAREA RUNOFF(CFS) =   19.58
  EFFECTIVE AREA(ACRES) =     39.36    AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.54
  TOTAL AREA(ACRES) =     39.36        PEAK FLOW RATE(CFS) =      75.76

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.61   HALFSTREET FLOOD WIDTH(FEET) =  23.69
  FLOW VELOCITY(FEET/SEC.) =  6.34   DEPTH*VELOCITY(FT*FT/SEC.) =   3.89
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  323.5 FT WITH ELEVATION-DROP =  10.0 FT, IS   36.8 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20225.00
  LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20225.00 =  2080.68 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020225.0 TO NODE LR020226.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) = 1885.00  DOWNSTREAM ELEVATION(FEET) = 1875.00
  STREET LENGTH(FEET) =   288.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00
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  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.77

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      84.85
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.62
    HALFSTREET FLOOD WIDTH(FEET) =   24.24
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.80
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.25
  STREET FLOW TRAVEL TIME(MIN.) =   0.71   Tc(MIN.) =  17.64
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.605
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        2.52      0.98      0.60    32
  MOBILE HOME PARK           A        6.40      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.35
  SUBAREA AREA(ACRES) =    8.92      SUBAREA RUNOFF(CFS) =   18.18
  EFFECTIVE AREA(ACRES) =     48.28    AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.51
  TOTAL AREA(ACRES) =     48.28        PEAK FLOW RATE(CFS) =      91.65

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.64   HALFSTREET FLOOD WIDTH(FEET) =  24.91
  FLOW VELOCITY(FEET/SEC.) =  6.97   DEPTH*VELOCITY(FT*FT/SEC.) =   4.45
  LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20226.00 =  2369.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020226.0 TO NODE LR020227.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) = 1875.00  DOWNSTREAM ELEVATION(FEET) = 1863.00
  STREET LENGTH(FEET) =   404.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
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  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.81

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     104.21
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.68
    HALFSTREET FLOOD WIDTH(FEET) =   26.99
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.81
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.63
  STREET FLOW TRAVEL TIME(MIN.) =   0.99   Tc(MIN.) =  18.63
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.521
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A        9.70      0.98      0.25    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        3.00      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.33
  SUBAREA AREA(ACRES) =   12.70      SUBAREA RUNOFF(CFS) =   25.11
  EFFECTIVE AREA(ACRES) =     60.98    AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.47
  TOTAL AREA(ACRES) =     60.98        PEAK FLOW RATE(CFS) =     113.12

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.70   HALFSTREET FLOOD WIDTH(FEET) =  27.84
  FLOW VELOCITY(FEET/SEC.) =  6.97   DEPTH*VELOCITY(FT*FT/SEC.) =   4.86
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  404.5 FT WITH ELEVATION-DROP =  12.0 FT, IS   46.1 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20227.00
  LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20227.00 =  2773.68 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020227.0 TO NODE LR020228.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1863.00  DOWNSTREAM ELEVATION(FEET) = 1848.00
  STREET LENGTH(FEET) =   374.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.74

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     122.87
    ***STREET FLOWING FULL***
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    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.68
    HALFSTREET FLOOD WIDTH(FEET) =   27.11
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.96
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.43
  STREET FLOW TRAVEL TIME(MIN.) =   0.78   Tc(MIN.) =  19.42
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.460
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A        4.46      0.98      0.25    32
  PUBLIC PARK                A        4.98      0.98      0.85    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.96      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.57
  SUBAREA AREA(ACRES) =   11.40      SUBAREA RUNOFF(CFS) =   19.51
  EFFECTIVE AREA(ACRES) =     72.38    AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.49
  TOTAL AREA(ACRES) =     72.38        PEAK FLOW RATE(CFS) =     129.25

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.69   HALFSTREET FLOOD WIDTH(FEET) =  27.66
  FLOW VELOCITY(FEET/SEC.) =  8.06   DEPTH*VELOCITY(FT*FT/SEC.) =   5.59
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  374.5 FT WITH ELEVATION-DROP =  15.0 FT, IS   41.5 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20228.00
  LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20228.00 =  3148.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020228.0 TO NODE LR020229.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1848.00  DOWNSTREAM ELEVATION(FEET) = 1826.00
  STREET LENGTH(FEET) =   510.53   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.73

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     142.29
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.71
    HALFSTREET FLOOD WIDTH(FEET) =   28.33
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.48
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  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.99
 STREET FLOW TRAVEL TIME(MIN.) =   1.00   Tc(MIN.) =  20.42
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.386
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 MOBILE HOME PARK           A        5.30      0.98      0.25    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        4.30      0.98      0.60    32
 PUBLIC PARK                A        6.33      0.98      0.85    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.58
 SUBAREA AREA(ACRES) =   15.93      SUBAREA RUNOFF(CFS) =   26.07
 EFFECTIVE AREA(ACRES) =     88.31    AREA-AVERAGED Fm(INCH/HR) =  0.49
 AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.50
 TOTAL AREA(ACRES) =     88.31        PEAK FLOW RATE(CFS) =     150.54

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.16

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.72   HALFSTREET FLOOD WIDTH(FEET) =  28.94
 FLOW VELOCITY(FEET/SEC.) =  8.61   DEPTH*VELOCITY(FT*FT/SEC.) =   6.19
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  510.5 FT WITH ELEVATION-DROP =  22.0 FT, IS   53.6 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20229.00
 LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20229.00 =  3658.71 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020229.0 TO NODE LR020230.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1826.00  DOWNSTREAM ELEVATION(FEET) = 1800.00
 STREET LENGTH(FEET) =   713.66   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.76

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     168.38
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.77
   HALFSTREET FLOOD WIDTH(FEET) =   31.26
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.31
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.36
 STREET FLOW TRAVEL TIME(MIN.) =   1.43   Tc(MIN.) =  21.85
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.291
 SUBAREA LOSS RATE DATA(AMC  II):
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  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 MOBILE HOME PARK           A       11.14      0.98      0.25    32
 PUBLIC PARK                A        6.85      0.98      0.85    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        3.99      0.98      0.60    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =   21.98      SUBAREA RUNOFF(CFS) =   35.67
 EFFECTIVE AREA(ACRES) =    110.29    AREA-AVERAGED Fm(INCH/HR) =  0.49
 AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.50
 TOTAL AREA(ACRES) =    110.29        PEAK FLOW RATE(CFS) =     178.66

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.78   HALFSTREET FLOOD WIDTH(FEET) =  31.99
 FLOW VELOCITY(FEET/SEC.) =  8.43   DEPTH*VELOCITY(FT*FT/SEC.) =   6.57

 *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
        THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.76
 SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
 ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
 ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
 ASSUME FULL-FLOWING PIPELINE
 PIPE-FLOW VELOCITY(FEET/SEC.) =  12.66
 PIPE-FLOW(CFS) =     39.80
 PIPEFLOW TRAVEL TIME(MIN.) =   0.94    Tc(MIN.) =  21.36
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.323
 SUBAREA AREA(ACRES) =   21.98      SUBAREA RUNOFF(CFS) =   36.30
 TOTAL AREA(ACRES) =    110.29        PEAK FLOW RATE(CFS) =    181.79

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  141.99
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.72
   HALFSTREET FLOOD WIDTH(FEET) =   29.25
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.96
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.77
 LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20230.00 =  4372.37 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020230.0 TO NODE LR020231.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1800.00  DOWNSTREAM ELEVATION(FEET) = 1769.00
 STREET LENGTH(FEET) =   900.35   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
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SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.77

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     206.25
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.82
  HALFSTREET FLOOD WIDTH(FEET) =   34.25
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.53
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.03
STREET FLOW TRAVEL TIME(MIN.) =   1.76   Tc(MIN.) =  23.12
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.215
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
MOBILE HOME PARK           A       14.01      0.98      0.25    32
MOBILE HOME PARK           B        8.21      0.75      0.25    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       A        2.69      0.98      0.60    32
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        3.23      0.75      0.60    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.88
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.32
SUBAREA AREA(ACRES) =   28.14      SUBAREA RUNOFF(CFS) =   48.92
EFFECTIVE AREA(ACRES) =    138.43    AREA-AVERAGED Fm(INCH/HR) =  0.45
AREA-AVERAGED Fp(INCH/HR) =  0.96  AREA-AVERAGED Ap =  0.47
TOTAL AREA(ACRES) =    138.43        PEAK FLOW RATE(CFS) =     220.02

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.84   HALFSTREET FLOOD WIDTH(FEET) =  35.10
FLOW VELOCITY(FEET/SEC.) =  8.67   DEPTH*VELOCITY(FT*FT/SEC.) =   7.30

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.77
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  14.28
PIPE-FLOW(CFS) =     70.17
PIPEFLOW TRAVEL TIME(MIN.) =   1.05    Tc(MIN.) =  22.41
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.257
SUBAREA AREA(ACRES) =   28.14      SUBAREA RUNOFF(CFS) =   49.98
TOTAL AREA(ACRES) =    138.43        PEAK FLOW RATE(CFS) =    225.23

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  155.06
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
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  STREET FLOW DEPTH(FEET) =  0.75
  HALFSTREET FLOOD WIDTH(FEET) =   30.59
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.97
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.00
LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20231.00 =  5272.72 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020231.0 TO NODE LR020232.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1769.00  DOWNSTREAM ELEVATION(FEET) = 1739.00
 STREET LENGTH(FEET) =   905.39   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.78

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     239.01
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.87
   HALFSTREET FLOOD WIDTH(FEET) =   36.57
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.70
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.58
 STREET FLOW TRAVEL TIME(MIN.) =   1.73   Tc(MIN.) =  24.15
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.158
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 MOBILE HOME PARK           A        0.17      0.98      0.25    32
 MOBILE HOME PARK           B        5.75      0.75      0.25    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       11.10      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.48
 SUBAREA AREA(ACRES) =   17.02      SUBAREA RUNOFF(CFS) =   27.57
 EFFECTIVE AREA(ACRES) =    155.45    AREA-AVERAGED Fm(INCH/HR) =  0.44
 AREA-AVERAGED Fp(INCH/HR) =  0.94  AREA-AVERAGED Ap =  0.47
 TOTAL AREA(ACRES) =    155.45        PEAK FLOW RATE(CFS) =     240.50

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.87   HALFSTREET FLOOD WIDTH(FEET) =  36.63
 FLOW VELOCITY(FEET/SEC.) =  8.72   DEPTH*VELOCITY(FT*FT/SEC.) =   7.61

 *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
        THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.78
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  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.93
  PIPE-FLOW(CFS) =     88.75
  PIPEFLOW TRAVEL TIME(MIN.) =   1.01    Tc(MIN.) =  23.42
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.198
  SUBAREA AREA(ACRES) =   17.02      SUBAREA RUNOFF(CFS) =   28.18
  TOTAL AREA(ACRES) =    155.45        PEAK FLOW RATE(CFS) =    246.06

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  157.31
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.76
    HALFSTREET FLOOD WIDTH(FEET) =   31.02
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.88
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.99
  LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20232.00 =  6178.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020232.0 TO NODE LR020232.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  23.42
  RAINFALL INTENSITY(INCH/HR) =   2.20
  AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.94
  AREA-AVERAGED Ap =  0.47
  EFFECTIVE STREAM AREA(ACRES) =   155.45
  TOTAL STREAM AREA(ACRES) =   155.45
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    246.06

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    277.91  24.01    2.166  0.96( 0.44) 0.46   171.3 LR020210.0
      1    261.64  27.73    1.986  0.96( 0.45) 0.46   181.7 LR020200.0
      2    246.06  23.42    2.198  0.94( 0.44) 0.47   155.4 LR020220.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    522.29  23.42    2.198  0.95( 0.44) 0.46   322.6 LR020220.0
      2    519.47  24.01    2.166  0.95( 0.44) 0.46   326.7 LR020210.0
      3    478.09  27.73    1.986  0.95( 0.44) 0.47   337.2 LR020200.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
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  PEAK FLOW RATE(CFS) =    522.29    Tc(MIN.) =    23.42
  EFFECTIVE AREA(ACRES) =   322.58   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.95  AREA-AVERAGED Ap =  0.46
  TOTAL AREA(ACRES) =    337.15
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20232.00 =  7433.97 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020232.0 TO NODE LR020249.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1739.00  DOWNSTREAM ELEVATION(FEET) = 1735.00
  STREET LENGTH(FEET) =  1274.82   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     534.74
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.68
    HALFSTREET FLOOD WIDTH(FEET) =   82.62
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.16
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.99
  STREET FLOW TRAVEL TIME(MIN.) =   5.10   Tc(MIN.) =  28.53
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.953
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.11      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       18.30      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   18.41      SUBAREA RUNOFF(CFS) =   24.91
  EFFECTIVE AREA(ACRES) =    340.99    AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.94  AREA-AVERAGED Ap =  0.47
  TOTAL AREA(ACRES) =    355.56        PEAK FLOW RATE(CFS) =     522.29
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 4.00

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.67   HALFSTREET FLOOD WIDTH(FEET) =  81.94
  FLOW VELOCITY(FEET/SEC.) =  4.14   DEPTH*VELOCITY(FT*FT/SEC.) =   6.89

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
```

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       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.87
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  96.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.37
  PIPE-FLOW(CFS) =    471.19
  PIPEFLOW TRAVEL TIME(MIN.) =   2.27    Tc(MIN.) =  25.69
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.079
  SUBAREA AREA(ACRES) =   18.41      SUBAREA RUNOFF(CFS) =   27.00
  TOTAL AREA(ACRES) =    355.56        PEAK FLOW RATE(CFS) =    522.29
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 4.00
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   51.10
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.82
    HALFSTREET FLOOD WIDTH(FEET) =   39.71
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.18
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.79
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20249.00 =  8708.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020249.0 TO NODE LR020249.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  25.69
  RAINFALL INTENSITY(INCH/HR) =   2.08
  AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.94
  AREA-AVERAGED Ap =  0.47
  EFFECTIVE STREAM AREA(ACRES) =   340.99
  TOTAL STREAM AREA(ACRES) =   355.56
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    522.29

****************************************************************************
  FLOW PROCESS FROM NODE LR020240.0 TO NODE LR020241.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   916.98
  ELEVATION DATA: UPSTREAM(FEET) =   1880.00  DOWNSTREAM(FEET) =   1855.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.964
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.134
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        4.79      0.98      0.60    32   12.96
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  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.77      0.75      0.60    56   12.96
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.88
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     20.10
  TOTAL AREA(ACRES) =      8.56   PEAK FLOW RATE(CFS) =     20.10

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020241.0 TO NODE LR020242.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1855.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1848.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   207.39
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.055
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.59      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.06      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.85
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     24.29
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.06
  AVERAGE FLOW DEPTH(FEET) =   0.56   FLOOD WIDTH(FEET) =   28.17
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.57   Tc(MIN.) =  13.53
  SUBAREA AREA(ACRES) =    3.65       SUBAREA RUNOFF(CFS) =    8.36
  EFFECTIVE AREA(ACRES) =   12.21     AREA-AVERAGED Fm(INCH/HR) =   0.52
  AREA-AVERAGED Fp(INCH/HR) =   0.87  AREA-AVERAGED Ap =   0.60
  TOTAL AREA(ACRES) =     12.21         PEAK FLOW RATE(CFS) =      27.85

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.58   FLOOD WIDTH(FEET) =   30.41
  FLOW VELOCITY(FEET/SEC.) =   6.10   DEPTH*VELOCITY(FT*FT/SEC) =   3.56
  LONGEST FLOWPATH FROM NODE  20240.00 TO NODE  20242.00 =  1124.37 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020242.0 TO NODE LR020243.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1848.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1840.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   276.91
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
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  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.953
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        2.48      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.59      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.59      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.83
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     35.14
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.91
  AVERAGE FLOW DEPTH(FEET) =   0.62   FLOOD WIDTH(FEET) =   35.34
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.78   Tc(MIN.) =  14.31
  SUBAREA AREA(ACRES) =    6.66       SUBAREA RUNOFF(CFS) =   14.59
  EFFECTIVE AREA(ACRES) =   18.87     AREA-AVERAGED Fm(INCH/HR) =   0.52
  AREA-AVERAGED Fp(INCH/HR) =   0.85  AREA-AVERAGED Ap =   0.61
  TOTAL AREA(ACRES) =     18.87         PEAK FLOW RATE(CFS) =      41.33

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.65   FLOOD WIDTH(FEET) =   38.17
  FLOW VELOCITY(FEET/SEC.) =   6.05   DEPTH*VELOCITY(FT*FT/SEC) =   3.93
  LONGEST FLOWPATH FROM NODE  20240.00 TO NODE  20243.00 =  1401.28 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020243.0 TO NODE LR020244.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1840.00  DOWNSTREAM ELEVATION(FEET) = 1830.00
  STREET LENGTH(FEET) =   293.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.81

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      50.29
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.58
    HALFSTREET FLOOD WIDTH(FEET) =   21.05
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.44
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.15
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  STREET FLOW TRAVEL TIME(MIN.) =   0.90   Tc(MIN.) =  15.21
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.848
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        3.29      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.18      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.12      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.83
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.64
  SUBAREA AREA(ACRES) =    8.59       SUBAREA RUNOFF(CFS) =   17.91
  EFFECTIVE AREA(ACRES) =    27.46    AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.85  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =     27.46        PEAK FLOW RATE(CFS) =      57.45

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.60   HALFSTREET FLOOD WIDTH(FEET) =  22.16
  FLOW VELOCITY(FEET/SEC.) =  5.63   DEPTH*VELOCITY(FT*FT/SEC.) =   3.39
  LONGEST FLOWPATH FROM NODE  20240.00 TO NODE  20244.00 =  1694.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020244.0 TO NODE LR020245.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1830.00  DOWNSTREAM ELEVATION(FEET) = 1815.00
  STREET LENGTH(FEET) =   273.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.73

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      65.28
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.58
    HALFSTREET FLOOD WIDTH(FEET) =   21.22
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.95
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.05
  STREET FLOW TRAVEL TIME(MIN.) =   0.65   Tc(MIN.) =  15.87
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.776
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
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```
  "3-4 DWELLINGS/ACRE"       A        2.55      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.04      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.15      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.82
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.64
  SUBAREA AREA(ACRES) =    7.74      SUBAREA RUNOFF(CFS) =   15.67
  EFFECTIVE AREA(ACRES) =     35.20    AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.84  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =     35.20        PEAK FLOW RATE(CFS) =      71.36

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.60   HALFSTREET FLOOD WIDTH(FEET) =  21.99
  FLOW VELOCITY(FEET/SEC.) =  7.10   DEPTH*VELOCITY(FT*FT/SEC.) =   4.25
  LONGEST FLOWPATH FROM NODE  20240.00 TO NODE  20245.00 =  1967.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020245.0 TO NODE LR020246.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1815.00  DOWNSTREAM ELEVATION(FEET) = 1805.00
  STREET LENGTH(FEET) =   359.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.85

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      81.22
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.68
    HALFSTREET FLOOD WIDTH(FEET) =   26.92
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.69
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.90
  STREET FLOW TRAVEL TIME(MIN.) =   1.05   Tc(MIN.) =  16.92
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.672
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        3.90      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.36      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.93      0.75      0.90    56
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  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.83
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
  SUBAREA AREA(ACRES) =   10.19      SUBAREA RUNOFF(CFS) =   19.72
  EFFECTIVE AREA(ACRES) =     45.39    AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.84  AREA-AVERAGED Ap =  0.63
  TOTAL AREA(ACRES) =     45.39        PEAK FLOW RATE(CFS) =      87.76

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.81

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.70   HALFSTREET FLOOD WIDTH(FEET) =  27.53
  FLOW VELOCITY(FEET/SEC.) =  5.88   DEPTH*VELOCITY(FT*FT/SEC.) =   4.10
  LONGEST FLOWPATH FROM NODE  20240.00 TO NODE  20246.00 =  2326.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020246.0 TO NODE LR020247.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1805.00  DOWNSTREAM ELEVATION(FEET) = 1795.00
  STREET LENGTH(FEET) =   324.04   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.83

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      95.67
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.70
    HALFSTREET FLOOD WIDTH(FEET) =   27.83
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.27
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.41
  STREET FLOW TRAVEL TIME(MIN.) =   0.86   Tc(MIN.) =  17.78
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.593
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        3.02      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.88      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.55      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.83
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.62
  SUBAREA AREA(ACRES) =    8.45      SUBAREA RUNOFF(CFS) =   15.83
  EFFECTIVE AREA(ACRES) =     53.84    AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.84  AREA-AVERAGED Ap =  0.62
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  TOTAL AREA(ACRES) =     53.84        PEAK FLOW RATE(CFS) =     100.38

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.71   HALFSTREET FLOOD WIDTH(FEET) =  28.26
  FLOW VELOCITY(FEET/SEC.) =  6.37   DEPTH*VELOCITY(FT*FT/SEC.) =   4.54
  LONGEST FLOWPATH FROM NODE  20240.00 TO NODE  20247.00 =  2650.82 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020247.0 TO NODE LR020248.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1795.00  DOWNSTREAM ELEVATION(FEET) = 1782.00
  STREET LENGTH(FEET) =   263.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.74

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     107.22
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.68
    HALFSTREET FLOOD WIDTH(FEET) =   26.85
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.55
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.16
  STREET FLOW TRAVEL TIME(MIN.) =   0.58   Tc(MIN.) =  18.36
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.544
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.94      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.00      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.49      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.81
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.62
  SUBAREA AREA(ACRES) =    7.43      SUBAREA RUNOFF(CFS) =   13.67
  EFFECTIVE AREA(ACRES) =     61.27    AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.83  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =     61.27        PEAK FLOW RATE(CFS) =     111.66

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
```



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  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.69   HALFSTREET FLOOD WIDTH(FEET) =  27.16
  FLOW VELOCITY(FEET/SEC.) =  7.69   DEPTH*VELOCITY(FT*FT/SEC.) =   5.30
  LONGEST FLOWPATH FROM NODE  20240.00 TO NODE  20248.00 =  2913.82 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020248.0 TO NODE LR020249.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1782.00  DOWNSTREAM ELEVATION(FEET) = 1735.00
  STREET LENGTH(FEET) =  1589.51   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     129.76
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.77
    HALFSTREET FLOOD WIDTH(FEET) =   30.94
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.86
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.25
  STREET FLOW TRAVEL TIME(MIN.) =   3.86   Tc(MIN.) =  22.23
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.268
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.28      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       21.09      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.85      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.61
  SUBAREA AREA(ACRES) =   22.22      SUBAREA RUNOFF(CFS) =   36.18
  EFFECTIVE AREA(ACRES) =     83.49    AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.81  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =     83.49        PEAK FLOW RATE(CFS) =     132.65

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.77   HALFSTREET FLOOD WIDTH(FEET) =  31.19
  FLOW VELOCITY(FEET/SEC.) =  6.90   DEPTH*VELOCITY(FT*FT/SEC.) =   5.31
  LONGEST FLOWPATH FROM NODE  20240.00 TO NODE  20249.00 =  4503.33 FEET.
```

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****************************************************************************
  FLOW PROCESS FROM NODE LR020249.0 TO NODE LR020249.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  22.23
  RAINFALL INTENSITY(INCH/HR) =   2.27
  AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.81
  AREA-AVERAGED Ap =  0.62
  EFFECTIVE STREAM AREA(ACRES) =    83.49
  TOTAL STREAM AREA(ACRES) =    83.49
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    132.65

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    522.29  25.69    2.079  0.94( 0.44) 0.47   341.0 LR020220.0
      1    519.47  26.27    2.052  0.94( 0.44) 0.47   345.2 LR020210.0
      1    478.09  30.05    1.893  0.94( 0.44) 0.47   355.6 LR020200.0
      2    132.65  22.23    2.268  0.81( 0.50) 0.62    83.5 LR020240.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    636.62  22.23    2.268  0.90( 0.46) 0.50   378.5 LR020240.0
      2    640.74  25.69    2.079  0.91( 0.45) 0.50   424.5 LR020220.0
      3    635.83  26.27    2.052  0.91( 0.45) 0.50   428.6 LR020210.0
      4    582.53  30.05    1.893  0.91( 0.45) 0.50   439.1 LR020200.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    640.74    Tc(MIN.) =    25.69
  EFFECTIVE AREA(ACRES) =   424.48   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.91  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =    439.05
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20249.00 =  8708.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020249.0 TO NODE LR020250.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1735.00  DOWNSTREAM ELEVATION(FEET) = 1733.00
  STREET LENGTH(FEET) =   391.69   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
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STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     641.41
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  1.64
  HALFSTREET FLOOD WIDTH(FEET) =   80.85
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.23
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    8.59
STREET FLOW TRAVEL TIME(MIN.) =   1.25   Tc(MIN.) =  26.94
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.021
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        0.58      0.75      0.60    56
RESIDENTIAL
".4 DWELLING/ACRE"         B        0.42      0.75      0.90    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.73
SUBAREA AREA(ACRES) =    1.00      SUBAREA RUNOFF(CFS) =    1.33
EFFECTIVE AREA(ACRES) =    425.48    AREA-AVERAGED Fm(INCH/HR) =  0.45
AREA-AVERAGED Fp(INCH/HR) =  0.91  AREA-AVERAGED Ap =  0.50
TOTAL AREA(ACRES) =    440.05        PEAK FLOW RATE(CFS) =     640.74
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.64   HALFSTREET FLOOD WIDTH(FEET) =  80.85
FLOW VELOCITY(FEET/SEC.) =  5.22   DEPTH*VELOCITY(FT*FT/SEC.) =   8.58

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 1.07
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  90.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  11.44
PIPE-FLOW(CFS) =    506.03
PIPEFLOW TRAVEL TIME(MIN.) =   0.57    Tc(MIN.) =  26.26
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.052
SUBAREA AREA(ACRES) =    1.00      SUBAREA RUNOFF(CFS) =    1.36
TOTAL AREA(ACRES) =    440.05        PEAK FLOW RATE(CFS) =    640.74
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  134.71
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  1.00
  HALFSTREET FLOOD WIDTH(FEET) =   48.44
```

```
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.46
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.45
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20250.00 =  9100.48 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020250.0 TO NODE LR020250.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020151.0 TO NODE LR020151.0 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME:  20151.dna
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1651.10    Tc(MIN.) =  36.15
  AREA-AVERAGED Fm(INCH/HR) =  0.61    Ybar = 0.54
  TOTAL AREA(ACRES) =    1725.04
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20151.00 = 15438.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020151.0 TO NODE LR020151.0 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1651.10    Tc(MIN.) =  36.15
  AREA-AVERAGED Fm(INCH/HR) =  0.61    Ybar = 0.54
  TOTAL AREA(ACRES) =    1725.04
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20151.00 = 15438.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020151.0 TO NODE LR020151.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020151.0 TO NODE LR020250.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1785.00  DOWNSTREAM(FEET) =   1733.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1656.68   CHANNEL SLOPE =  0.0314
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   1651.10
  FLOW VELOCITY(FEET/SEC.) =  29.87   FLOW DEPTH(FEET) =   3.32
  TRAVEL TIME(MIN.) =   0.92   Tc(MIN.) =  37.07
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20250.00 = 17094.86 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020250.0 TO NODE LR020250.0 IS CODE =  81
----------------------------------------------------------------------------
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```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  37.07
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.669
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        1.58      0.75       0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"          B       54.48      0.75       0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.89
  SUBAREA AREA(ACRES) =   56.06
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.46;30M= 0.94;1H= 1.24;3H= 2.17;6H= 3.08;24H= 7.45
  S-GRAPH: VALLEY(DEV.)= 23.5%;VALLEY(UNDEV.)/DESERT= 76.5%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.62; LAG(HR) = 0.49; Fm(INCH/HR) = 0.61; Ybar = 0.54
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.92; 30M = 0.92; 1HR = 0.92;
  3HR = 0.99; 6HR = 0.99; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1781.10
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20250.00 = 17094.86 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0423; Lca/L=0.4,n=.0379; Lca/L=0.5,n=.0348;Lca/L=0.6,n=.0325
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     535.19
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1668.73
  TOTAL AREA(ACRES) =   1781.10       PEAK FLOW RATE(CFS) =    1668.73

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.71

****************************************************************************
  FLOW PROCESS FROM NODE LR020250.0 TO NODE LR020250.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     1668.73    Tc(MIN.) =  37.07
  AREA-AVERAGED Fm(INCH/HR) =  0.61    Ybar = 0.54
  TOTAL AREA(ACRES) =    1781.10
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20250.00 = 17094.86 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    636.62  22.80    2.234  0.90( 0.46) 0.51   379.5 LR020240.0
      2    640.74  26.26    2.052  0.91( 0.45) 0.50   425.5 LR020220.0
      3    635.83  26.84    2.025  0.91( 0.45) 0.50   429.6 LR020210.0
      4    582.53  30.62    1.872  0.91( 0.45) 0.50   440.1 LR020200.0
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20250.00 =  9100.48 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.46;30M= 0.94;1H= 1.24;3H= 2.13;6H= 3.01;24H= 7.33
  S-GRAPH: VALLEY(DEV.)= 38.4%;VALLEY(UNDEV.)/DESERT= 61.6%
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```
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.62; LAG(HR) = 0.49; Fm(INCH/HR) = 0.58; Ybar = 0.53
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.90; 30M = 0.90; 1HR = 0.90;
  3HR = 0.99; 6HR = 0.99; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   2221.15
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20250.00 = 17094.86 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0423; Lca/L=0.4,n=.0379; Lca/L=0.5,n=.0348;Lca/L=0.6,n=.0325
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     674.16
  PEAK FLOW RATE(CFS) =    2093.74

****************************************************************************
  FLOW PROCESS FROM NODE LR020250.0 TO NODE LR020250.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020250.0 TO NODE LR020274.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1733.00  DOWNSTREAM(FEET) =   1670.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2379.03   CHANNEL SLOPE =  0.0265
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   2093.74
  FLOW VELOCITY(FEET/SEC.) =  29.98   FLOW DEPTH(FEET) =   3.92
  TRAVEL TIME(MIN.) =   1.32   Tc(MIN.) =  38.40
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20274.00 = 19473.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020274.0 TO NODE LR020274.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  38.40
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.634
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.23      0.75      0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.07      0.98      0.60    32
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        9.49      0.75      0.90    56
  SCHOOL                     B       24.91      0.75      0.60    56
  SCHOOL                     A        0.90      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA AREA(ACRES) =   38.60
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.46;30M= 0.94;1H= 1.24;3H= 2.13;6H= 3.00;24H= 7.31
  S-GRAPH: VALLEY(DEV.)= 39.0%;VALLEY(UNDEV.)/DESERT= 61.0%
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
```



```
  Tc(HR) = 0.64; LAG(HR) = 0.51; Fm(INCH/HR) = 0.58; Ybar = 0.53
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.90; 30M = 0.90; 1HR = 0.90;
  3HR = 0.98; 6HR = 0.99; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   2259.75
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20274.00 = 19473.89 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0390; Lca/L=0.4,n=.0350; Lca/L=0.5,n=.0321;Lca/L=0.6,n=.0300
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     685.18
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   2073.98
  TOTAL AREA(ACRES) =   2259.75       PEAK FLOW RATE(CFS) =    2093.74
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020274.0 TO NODE LR020274.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =    2093.74    Tc(MIN.) =  38.40
  AREA-AVERAGED Fm(INCH/HR) =  0.58   Ybar = 0.53
  TOTAL AREA(ACRES) =    2259.75

****************************************************************************
  FLOW PROCESS FROM NODE LR020260.0 TO NODE LR020261.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   680.83
  ELEVATION DATA: UPSTREAM(FEET) =   2600.00  DOWNSTREAM(FEET) =   2360.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.333
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.412
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.43      0.61      1.00    66   11.82
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.14      0.75      0.70    56    7.33
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.65
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.90
  SUBAREA RUNOFF(CFS) =     22.63
  TOTAL AREA(ACRES) =      6.57   PEAK FLOW RATE(CFS) =     22.63

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020261.0 TO NODE LR020262.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```

```
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2360.00  DOWNSTREAM(FEET) =   2280.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   583.76   CHANNEL SLOPE =  0.1370
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     22.63
  FLOW VELOCITY(FEET/SEC.) =   3.78   FLOW DEPTH(FEET) =   0.35
  TRAVEL TIME(MIN.) =   2.58   Tc(MIN.) =   9.91
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20262.00 =  1264.59 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020262.0 TO NODE LR020262.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN) =   9.91
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.683
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.44      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       15.90      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.64
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.93
  SUBAREA AREA(ACRES) =   20.34      SUBAREA RUNOFF(CFS) =   56.54
  EFFECTIVE AREA(ACRES) =     26.91   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.64  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =     26.91       PEAK FLOW RATE(CFS) =      74.86

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020262.0 TO NODE LR020263.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2280.00  DOWNSTREAM(FEET) =   2170.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   994.37   CHANNEL SLOPE =  0.1106
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     74.86
  FLOW VELOCITY(FEET/SEC.) =   4.75   FLOW DEPTH(FEET) =   0.56
  TRAVEL TIME(MIN.) =   3.49   Tc(MIN.) =  13.40
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20263.00 =  2258.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020263.0 TO NODE LR020263.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN) =  13.40
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.073
  SUBAREA LOSS RATE DATA(AMC  II):
```



```
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        8.82      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =    8.82      SUBAREA RUNOFF(CFS) =   20.23
  EFFECTIVE AREA(ACRES) =     35.73   AREA-AVERAGED Fm(INCH/HR) =  0.58
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =     35.73       PEAK FLOW RATE(CFS) =      80.32

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020263.0 TO NODE LR020264.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2170.00  DOWNSTREAM(FEET) =   2110.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   784.49   CHANNEL SLOPE =  0.0765
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     80.32
  FLOW VELOCITY(FEET/SEC.) =   4.17   FLOW DEPTH(FEET) =   0.62
  TRAVEL TIME(MIN.) =   3.14   Tc(MIN.) =  16.54
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20264.00 =  3043.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020264.0 TO NODE LR020264.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN) =  16.54
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.708
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       17.48      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        7.48      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.70
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.79
  SUBAREA AREA(ACRES) =   24.96      SUBAREA RUNOFF(CFS) =   48.47
  EFFECTIVE AREA(ACRES) =     60.69   AREA-AVERAGED Fm(INCH/HR) =  0.57
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     60.69       PEAK FLOW RATE(CFS) =     117.07

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020264.0 TO NODE LR020265.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
```

```
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2110.00  DOWNSTREAM(FEET) =   2080.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   660.96   CHANNEL SLOPE =  0.0454
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    117.07
  FLOW VELOCITY(FEET/SEC.) =   3.76   FLOW DEPTH(FEET) =   0.79
  TRAVEL TIME(MIN.) =   2.93   Tc(MIN.) =  19.46
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20265.00 =  3704.41 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020265.0 TO NODE LR020265.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN) =  19.46
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.456
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.85      0.75      0.70    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.71      0.75      0.90    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       59.45      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.63
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.97
  SUBAREA AREA(ACRES) =   67.01      SUBAREA RUNOFF(CFS) =  111.62
  EFFECTIVE AREA(ACRES) =    127.70   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.65  AREA-AVERAGED Ap =  0.91
  TOTAL AREA(ACRES) =    127.70       PEAK FLOW RATE(CFS) =     214.91

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020265.0 TO NODE LR020266.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2080.00  DOWNSTREAM(FEET) =   2010.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   947.22   CHANNEL SLOPE =  0.0739
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    214.91
  FLOW VELOCITY(FEET/SEC.) =   5.27   FLOW DEPTH(FEET) =   0.90
  TRAVEL TIME(MIN.) =   3.00   Tc(MIN.) =  22.46
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20266.00 =  4651.63 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020266.0 TO NODE LR020266.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN) =  22.46
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.254
```



```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       10.89      0.75      0.70    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       11.99      0.75      0.90    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.30      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.72
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.84
  SUBAREA AREA(ACRES) =   27.18      SUBAREA RUNOFF(CFS) =   40.36
  EFFECTIVE AREA(ACRES) =    154.88   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.89
  TOTAL AREA(ACRES) =    154.88       PEAK FLOW RATE(CFS) =     232.04

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020266.0 TO NODE LR020267.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2010.00  DOWNSTREAM(FEET) =   1960.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   906.98   CHANNEL SLOPE =  0.0551
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    232.04
  FLOW VELOCITY(FEET/SEC.) =   4.82   FLOW DEPTH(FEET) =   0.98
  TRAVEL TIME(MIN.) =   3.14   Tc(MIN.) =  25.60
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20267.00 =  5558.61 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020267.0 TO NODE LR020267.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN) =  25.60
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.084
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       53.81      0.75      0.70    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       46.51      0.75      0.90    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       68.77      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.88
  SUBAREA AREA(ACRES) =  169.09      SUBAREA RUNOFF(CFS) =  225.60
  EFFECTIVE AREA(ACRES) =    323.97   AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.89
  TOTAL AREA(ACRES) =    323.97       PEAK FLOW RATE(CFS) =     433.93

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
```

```
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020267.0 TO NODE LR020268.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1960.00  DOWNSTREAM(FEET) =   1890.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1268.30   CHANNEL SLOPE =  0.0552
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    433.93
  FLOW VELOCITY(FEET/SEC.) =  11.40   FLOW DEPTH(FEET) =   2.53
  TRAVEL TIME(MIN.) =   1.85   Tc(MIN.) =  27.45
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20268.00 =  6826.91 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020268.0 TO NODE LR020268.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  27.45
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.998
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       30.11      0.75      0.90    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        0.46      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.90
  SUBAREA AREA(ACRES) =   30.57      SUBAREA RUNOFF(CFS) =   36.52
  EFFECTIVE AREA(ACRES) =    354.54   AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.89
  TOTAL AREA(ACRES) =    354.54       PEAK FLOW RATE(CFS) =     445.48

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020268.0 TO NODE LR020269.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1890.00  DOWNSTREAM(FEET) =   1870.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   379.58   CHANNEL SLOPE =  0.0527
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    445.48
  FLOW VELOCITY(FEET/SEC.) =  11.32   FLOW DEPTH(FEET) =   2.59
  TRAVEL TIME(MIN.) =   0.56   Tc(MIN.) =  28.01
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20269.00 =  7206.49 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020269.0 TO NODE LR020269.0 IS CODE =  81
```



```
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  28.01
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.974
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       17.99      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.04      0.75      0.60    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       18.04      0.61      1.00    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       16.31      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.70
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.87
  SUBAREA AREA(ACRES) =   52.38      SUBAREA RUNOFF(CFS) =   64.50
  EFFECTIVE AREA(ACRES) =    406.92   AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.88
  TOTAL AREA(ACRES) =    406.92       PEAK FLOW RATE(CFS) =     502.32

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020269.0 TO NODE LR020270.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1870.00  DOWNSTREAM(FEET) =   1770.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2346.89   CHANNEL SLOPE =  0.0426
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    502.32
  FLOW VELOCITY(FEET/SEC.) =  10.84   FLOW DEPTH(FEET) =   2.92
  TRAVEL TIME(MIN.) =   3.61   Tc(MIN.) =  31.62
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20270.00 =  9553.38 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020270.0 TO NODE LR020270.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  31.62
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.836
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.45      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       71.00      0.75      0.90    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        5.28      0.61      1.00    66
  RESIDENTIAL
```

```
  "2 DWELLINGS/ACRE"         B       40.34      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.82
  SUBAREA AREA(ACRES) =  122.07      SUBAREA RUNOFF(CFS) =  134.54
  EFFECTIVE AREA(ACRES) =    528.99   AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.69  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =    528.99       PEAK FLOW RATE(CFS) =     586.14

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 4.17

****************************************************************************
  FLOW PROCESS FROM NODE LR020270.0 TO NODE LR020271.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1770.00  DOWNSTREAM ELEVATION(FEET) = 1755.00
  STREET LENGTH(FEET) =   692.85   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     667.45
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.30
    HALFSTREET FLOOD WIDTH(FEET) =   63.88
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.07
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   11.83
  STREET FLOW TRAVEL TIME(MIN.) =   1.27   Tc(MIN.) =  32.89
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.793
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B      127.18      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       11.00      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       18.36      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.17      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.86
  SUBAREA AREA(ACRES) =  156.71      SUBAREA RUNOFF(CFS) =  162.61
  EFFECTIVE AREA(ACRES) =    685.70    AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =    685.70        PEAK FLOW RATE(CFS) =     728.30
```



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  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.40; 6HR = 1.91; 24HR = 4.34

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.34   HALFSTREET FLOOD WIDTH(FEET) =  65.77
  FLOW VELOCITY(FEET/SEC.) =  9.28   DEPTH*VELOCITY(FT*FT/SEC.) =  12.46

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.87
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  75.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  75.0 INCH PIPE IS  56.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  23.68
  PIPE-FLOW(CFS) =    586.14
  PIPEFLOW TRAVEL TIME(MIN.) =   0.49    Tc(MIN.) =  32.11
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.819
  SUBAREA AREA(ACRES) =  156.71      SUBAREA RUNOFF(CFS) =  166.31
  TOTAL AREA(ACRES) =    685.70        PEAK FLOW RATE(CFS) =    744.45

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.40; 6HR = 1.91; 24HR = 4.34
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  158.31
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.86
    HALFSTREET FLOOD WIDTH(FEET) =   41.42
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.03
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.15
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =   692.8 FT WITH ELEVATION-DROP =  15.0 FT, IS  369.7 CFS,
         WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  20271.00
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20271.00 = 10246.23 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020270.0 TO NODE LR020271.0 IS CODE =  71
----------------------------------------------------------------------------
  >>>>>PEAK FLOW RATE ESTIMATOR CHANGED TO UNIT-HYDROGRAPH METHOD<<<<<
  >>>>>USING TIME-OF-CONCENTRATION OF LONGEST FLOWPATH<<<<<
============================================================================
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.40;30M= 0.82;1H= 1.09;3H= 1.77;6H= 2.41;24H= 6.18
  S-GRAPH: VALLEY(DEV.)= 28.6%;VALLEY(UNDEV.)/DESERT= 71.4%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.54; LAG(HR) = 0.43; Fm(INCH/HR) = 0.61; Ybar = 0.60
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 1.00; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    685.70
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20271.00 = 10246.23 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0540; Lca/L=0.4,n=.0484; Lca/L=0.5,n=.0445;Lca/L=0.6,n=.0415
  TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     154.48
  UNIT-HYDROGRAPH METHOD PEAK FLOW RATE(CFS) =    621.24
  TOTAL PEAK FLOW RATE(CFS) =    621.24 (SOURCE FLOW INCLUDED)
  RATIONAL METHOD PEAK FLOW RATE(CFS) =    744.45
   (UPSTREAM NODE PEAK FLOW RATE(CFS) =    744.45)
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  PEAK FLOW RATE(CFS) USED =    744.45

****************************************************************************
  FLOW PROCESS FROM NODE LR020271.0 TO NODE LR020272.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1755.00  DOWNSTREAM ELEVATION(FEET) = 1730.00
  STREET LENGTH(FEET) =  1359.40   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.98

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     791.91
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.42
    HALFSTREET FLOOD WIDTH(FEET) =   69.55
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.93
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   12.66
  STREET FLOW TRAVEL TIME(MIN.) =   2.54   Tc(MIN.) =  34.65
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.738
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       92.29      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.58      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.88
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.41;30M= 0.84;1H= 1.11;3H= 1.80;6H= 2.45;24H= 6.27
  S-GRAPH: VALLEY(DEV.)= 25.8%;VALLEY(UNDEV.)/DESERT= 74.2%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.58; LAG(HR) = 0.46; Fm(INCH/HR) = 0.62; Ybar = 0.60
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    783.57
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20272.00 = 10246.23 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0586; Lca/L=0.4,n=.0526; Lca/L=0.5,n=.0483;Lca/L=0.6,n=.0450
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     178.40
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    676.31
  TOTAL AREA(ACRES) =    783.57        PEAK FLOW RATE(CFS) =     744.45
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
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  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.91

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.39   HALFSTREET FLOOD WIDTH(FEET) =  68.15
  FLOW VELOCITY(FEET/SEC.) =  8.77   DEPTH*VELOCITY(FT*FT/SEC.) =  12.19

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.98
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  72.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.72
  PIPE-FLOW(CFS) =    529.63
  PIPEFLOW TRAVEL TIME(MIN.) =   1.21    Tc(MIN.) =  33.32
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.41;30M= 0.84;1H= 1.11;3H= 1.80;6H= 2.45;24H= 6.27
  S-GRAPH: VALLEY(DEV.)= 25.8%;VALLEY(UNDEV.)/DESERT= 74.2%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.54; LAG(HR) = 0.43; Fm(INCH/HR) = 0.62; Ybar = 0.60
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    783.57
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20272.00 = 11605.63 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0483; Lca/L=0.4,n=.0433; Lca/L=0.5,n=.0397;Lca/L=0.6,n=.0371
  TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     178.40
  TOTAL AREA(ACRES) =    783.57        PEAK FLOW RATE(CFS) =    744.45
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.91
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  214.82
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.95
    HALFSTREET FLOOD WIDTH(FEET) =   46.06
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.25
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.92

****************************************************************************
  FLOW PROCESS FROM NODE LR020272.0 TO NODE LR020273.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1730.00  DOWNSTREAM ELEVATION(FEET) = 1695.00
  STREET LENGTH(FEET) =  1247.53   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
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Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.82

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     770.90
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  1.34
  HALFSTREET FLOOD WIDTH(FEET) =   60.13
  AVERAGE FLOW VELOCITY(FEET/SEC.) =   10.55
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   14.17
STREET FLOW TRAVEL TIME(MIN.) =   1.97   Tc(MIN.) =  35.29
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.719
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        2.91      0.75      0.60    56
RESIDENTIAL
".4 DWELLING/ACRE"         B       52.68      0.75      0.90    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.88
UNIT-HYDROGRAPH DATA:
RAINFALL(INCH): 5M= 0.41;30M= 0.85;1H= 1.12;3H= 1.82;6H= 2.47;24H= 6.29
S-GRAPH: VALLEY(DEV.)= 24.4%;VALLEY(UNDEV.)/DESERT= 75.6%
         MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
Tc(HR) = 0.59; LAG(HR) = 0.47; Fm(INCH/HR) = 0.62; Ybar = 0.60
USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
3HR = 0.99; 6HR = 1.00; 24HR= 1.00
UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    839.16
LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20273.00 = 11605.63 FEET.
 EQUIVALENT BASIN FACTOR APPROXIMATIONS:
 Lca/L=0.3,n=.0534; Lca/L=0.4,n=.0479; Lca/L=0.5,n=.0440;Lca/L=0.6,n=.0411
TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     190.68
UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    720.89
TOTAL AREA(ACRES) =    839.16        PEAK FLOW RATE(CFS) =     744.45
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.33   HALFSTREET FLOOD WIDTH(FEET) =  59.27
FLOW VELOCITY(FEET/SEC.) = 10.49   DEPTH*VELOCITY(FT*FT/SEC.) =  13.90

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.82
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  69.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  22.47
PIPE-FLOW(CFS) =    583.97
PIPEFLOW TRAVEL TIME(MIN.) =   0.93    Tc(MIN.) =  34.24
UNIT-HYDROGRAPH DATA:
RAINFALL(INCH): 5M= 0.41;30M= 0.85;1H= 1.12;3H= 1.82;6H= 2.47;24H= 6.29
S-GRAPH: VALLEY(DEV.)= 24.4%;VALLEY(UNDEV.)/DESERT= 75.6%
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         MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.56; LAG(HR) = 0.44; Fm(INCH/HR) = 0.62; Ybar = 0.60
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    839.16
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20273.00 = 12853.16 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0458; Lca/L=0.4,n=.0411; Lca/L=0.5,n=.0377;Lca/L=0.6,n=.0352
  TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     190.68
  TOTAL AREA(ACRES) =    839.16        PEAK FLOW RATE(CFS) =    744.45
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  160.48
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.79
    HALFSTREET FLOOD WIDTH(FEET) =   32.30
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.43
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.84

****************************************************************************
  FLOW PROCESS FROM NODE LR020273.0 TO NODE LR020274.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1695.00  DOWNSTREAM ELEVATION(FEET) = 1670.00
  STREET LENGTH(FEET) =   797.55   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.79

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     745.96
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.30
    HALFSTREET FLOOD WIDTH(FEET) =   58.05
    AVERAGE FLOW VELOCITY(FEET/SEC.) =   10.95
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   14.24
  STREET FLOW TRAVEL TIME(MIN.) =   1.21   Tc(MIN.) =  35.46
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.714
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.08      0.75      0.90    56
```

```
SCHOOL                      B        0.94      0.75      0.60    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.81
UNIT-HYDROGRAPH DATA:
RAINFALL(INCH): 5M= 0.41;30M= 0.85;1H= 1.12;3H= 1.82;6H= 2.47;24H= 6.29
S-GRAPH: VALLEY(DEV.)= 24.4%;VALLEY(UNDEV.)/DESERT= 75.6%
         MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
Tc(HR) = 0.59; LAG(HR) = 0.47; Fm(INCH/HR) = 0.62; Ybar = 0.60
USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
3HR = 0.99; 6HR = 1.00; 24HR= 1.00
UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    842.18
LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20274.00 = 12853.16 FEET.
 EQUIVALENT BASIN FACTOR APPROXIMATIONS:
 Lca/L=0.3,n=.0490; Lca/L=0.4,n=.0439; Lca/L=0.5,n=.0403;Lca/L=0.6,n=.0376
TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     191.42
UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    722.07
TOTAL AREA(ACRES) =    842.18        PEAK FLOW RATE(CFS) =     744.45
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.30   HALFSTREET FLOOD WIDTH(FEET) =  57.99
FLOW VELOCITY(FEET/SEC.) = 10.95   DEPTH*VELOCITY(FT*FT/SEC.) =  14.23

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.79
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  69.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  23.75
PIPE-FLOW(CFS) =    617.27
PIPEFLOW TRAVEL TIME(MIN.) =   0.56    Tc(MIN.) =  34.80
UNIT-HYDROGRAPH DATA:
RAINFALL(INCH): 5M= 0.41;30M= 0.85;1H= 1.12;3H= 1.82;6H= 2.47;24H= 6.29
S-GRAPH: VALLEY(DEV.)= 24.4%;VALLEY(UNDEV.)/DESERT= 75.6%
         MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
Tc(HR) = 0.57; LAG(HR) = 0.46; Fm(INCH/HR) = 0.62; Ybar = 0.60
USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
3HR = 0.99; 6HR = 1.00; 24HR= 1.00
UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    842.18
LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20274.00 = 13650.71 FEET.
 EQUIVALENT BASIN FACTOR APPROXIMATIONS:
 Lca/L=0.3,n=.0447; Lca/L=0.4,n=.0401; Lca/L=0.5,n=.0368;Lca/L=0.6,n=.0343
TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     191.42
TOTAL AREA(ACRES) =    842.18        PEAK FLOW RATE(CFS) =    744.45
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  127.19
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
```



```
    STREET FLOW DEPTH(FEET) =  0.72
    HALFSTREET FLOOD WIDTH(FEET) =   28.82
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.33
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.25

****************************************************************************
  FLOW PROCESS FROM NODE LR020274.0 TO NODE LR020274.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  PEAK FLOW RATE(CFS) =     744.45    Tc(MIN.) =  34.80
  AREA-AVERAGED Fm(INCH/HR) =  0.62   Ybar = 0.60
  TOTAL AREA(ACRES) =     842.18
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1      2093.74   38.40     2259.75  LR020120.0
     2       744.45   34.80      842.18  LR020260.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.91;1H= 1.21;3H= 2.05;6H= 2.86;24H= 7.04
  S-GRAPH: VALLEY(DEV.)= 35.0%;VALLEY(UNDEV.)/DESERT= 65.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.64; LAG(HR) = 0.51; Fm(INCH/HR) = 0.59; Ybar = 0.55
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.86; 30M = 0.86; 1HR = 0.86;
  3HR = 0.98; 6HR = 0.99; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   3101.93
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20274.00 = 19473.89 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0390; Lca/L=0.4,n=.0350; Lca/L=0.5,n=.0321;Lca/L=0.6,n=.0300
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     867.45
  PEAK FLOW RATE(CFS) =   2577.37

****************************************************************************
  FLOW PROCESS FROM NODE LR020274.0 TO NODE LR020274.0 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20274.dna
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =   3101.93  TC(MIN.) =     38.40
  AREA-AVERAGED Fm(INCH/HR)=  0.59   Ybar =  0.55
  PEAK FLOW RATE(CFS)   =   2577.37
============================================================================
============================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

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**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
         (c) Copyright 1983-2002 Advanced Engineering Software (aes)
             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                           County of San Bernardino
                         Transportation Flood Control

                          Water Resources Division

--------------------------------------------------------------------------
  FILE NAME: LR0203ZZ.Z13
  TIME/DATE OF STUDY: 11:16 09/13/2004
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.2340

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)     (n)
===  =====  ========  =================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
```



```
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


**************************************************************************
  FLOW PROCESS FROM NODE LR020300.0 TO NODE LR020301.0 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   658.37
  ELEVATION DATA: UPSTREAM(FEET) =   2600.00  DOWNSTREAM(FEET) =   2400.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.287
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.047
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        6.22      0.61      1.00    66   12.01
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.99      0.75      0.90    56    8.29
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.63
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.99
  SUBAREA RUNOFF(CFS) =     22.23
  TOTAL AREA(ACRES) =      7.21   PEAK FLOW RATE(CFS) =     22.23

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

**************************************************************************
  FLOW PROCESS FROM NODE LR020301.0 TO NODE LR020302.0 IS CODE =  54
--------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2400.00  DOWNSTREAM(FEET) =   2380.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   422.45   CHANNEL SLOPE =  0.0473
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     22.23
  FLOW VELOCITY(FEET/SEC.) =   2.56   FLOW DEPTH(FEET) =   0.42
  TRAVEL TIME(MIN.) =   2.75   Tc(MIN.) =  11.04
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20302.00 =  1080.82 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR020302.0 TO NODE LR020302.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  11.04
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.408
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.12      0.75      0.90    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.14      0.61      1.00    66
  SCHOOL                     B        3.66      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.66
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.81
  SUBAREA AREA(ACRES) =    7.92      SUBAREA RUNOFF(CFS) =   20.45
  EFFECTIVE AREA(ACRES) =     15.13   AREA-AVERAGED Fm(INCH/HR) =  0.58
  AREA-AVERAGED Fp(INCH/HR) =  0.65  AREA-AVERAGED Ap =  0.90
  TOTAL AREA(ACRES) =     15.13       PEAK FLOW RATE(CFS) =      38.53

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020302.0 TO NODE LR020303.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2380.00  DOWNSTREAM(FEET) =   2320.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   870.68   CHANNEL SLOPE =  0.0689
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     38.53
  FLOW VELOCITY(FEET/SEC.) =   3.38   FLOW DEPTH(FEET) =   0.48
  TRAVEL TIME(MIN.) =   4.30   Tc(MIN.) =  15.34
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20303.00 =  1951.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020303.0 TO NODE LR020303.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  15.34
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.797
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.15      0.61      1.00    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.80      0.75      0.90    56
  SCHOOL                     B       20.38      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.72
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
```



```
  SUBAREA AREA(ACRES) =   25.33      SUBAREA RUNOFF(CFS) =   52.76
  EFFECTIVE AREA(ACRES) =     40.46   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.76
  TOTAL AREA(ACRES) =     40.46       PEAK FLOW RATE(CFS) =      82.98

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020303.0 TO NODE LR020304.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2320.00  DOWNSTREAM(FEET) =   2280.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   981.07   CHANNEL SLOPE =  0.0408
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     82.98
  FLOW VELOCITY(FEET/SEC.) =   3.32   FLOW DEPTH(FEET) =   0.71
  TRAVEL TIME(MIN.) =   4.92   Tc(MIN.) =  20.26
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20304.00 =  2932.57 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020304.0 TO NODE LR020304.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  20.26
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.367
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       18.37      0.61      1.00    66
  SCHOOL                     B       15.66      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.66
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.82
  SUBAREA AREA(ACRES) =   34.03      SUBAREA RUNOFF(CFS) =   56.03
  EFFECTIVE AREA(ACRES) =     74.49   AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.78
  TOTAL AREA(ACRES) =     74.49       PEAK FLOW RATE(CFS) =     123.34

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020304.0 TO NODE LR020305.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2280.00  DOWNSTREAM(FEET) =   2220.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   823.37   CHANNEL SLOPE =  0.0729
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    123.34
  FLOW VELOCITY(FEET/SEC.) =   4.56   FLOW DEPTH(FEET) =   0.74
```

```
  TRAVEL TIME(MIN.) =   3.01   Tc(MIN.) =  23.27
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20305.00 =  3755.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020305.0 TO NODE LR020305.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  23.27
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.179
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        9.94      0.61      1.00    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        0.01      0.75      0.70    56
  SCHOOL                     B        7.91      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.66
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.82
  SUBAREA AREA(ACRES) =   17.86      SUBAREA RUNOFF(CFS) =   26.33
  EFFECTIVE AREA(ACRES) =     92.35   AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =     92.35       PEAK FLOW RATE(CFS) =     137.02

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020305.0 TO NODE LR020306.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2220.00  DOWNSTREAM(FEET) =   2190.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   801.97   CHANNEL SLOPE =  0.0374
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    137.02
  FLOW VELOCITY(FEET/SEC.) =   3.66   FLOW DEPTH(FEET) =   0.86
  TRAVEL TIME(MIN.) =   3.65   Tc(MIN.) =  26.91
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20306.00 =  4557.91 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020306.0 TO NODE LR020306.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  26.91
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.996
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.66      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       13.33      0.61      1.00    66
  SCHOOL                     B        2.17      0.75      0.60    56
```



```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.63
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.92
  SUBAREA AREA(ACRES) =   17.16      SUBAREA RUNOFF(CFS) =   21.81
  EFFECTIVE AREA(ACRES) =    109.51   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =    109.51       PEAK FLOW RATE(CFS) =     143.67

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020306.0 TO NODE LR020307.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2190.00  DOWNSTREAM(FEET) =   2185.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   181.13   CHANNEL SLOPE =  0.0276
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    143.67
  FLOW VELOCITY(FEET/SEC.) =   3.30   FLOW DEPTH(FEET) =   0.93
  TRAVEL TIME(MIN.) =   0.92   Tc(MIN.) =  27.83
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20307.00 =  4739.04 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020307.0 TO NODE LR020307.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  27.83
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.957
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.33      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.26      0.75      0.60    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.26      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.65
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.90
  SUBAREA AREA(ACRES) =    4.85      SUBAREA RUNOFF(CFS) =    6.01
  EFFECTIVE AREA(ACRES) =    114.36   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.82
  TOTAL AREA(ACRES) =    114.36       PEAK FLOW RATE(CFS) =     145.77

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020307.0 TO NODE LR020308.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2185.00  DOWNSTREAM(FEET) =   2175.00
```

```
  CHANNEL LENGTH THRU SUBAREA(FEET) =   269.83   CHANNEL SLOPE =  0.0371
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   4.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    145.77
  FLOW VELOCITY(FEET/SEC.) =   3.70   FLOW DEPTH(FEET) =   0.89
  TRAVEL TIME(MIN.) =   1.22   Tc(MIN.) =  29.05
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20308.00 =  5008.87 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020308.0 TO NODE LR020308.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  29.05
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.907
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.10      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.65      0.75      0.60    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.26      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.78
  SUBAREA AREA(ACRES) =    4.01      SUBAREA RUNOFF(CFS) =    4.93
  EFFECTIVE AREA(ACRES) =    118.37   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =    118.37       PEAK FLOW RATE(CFS) =     145.77
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020308.0 TO NODE LR020309.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2175.00  DOWNSTREAM ELEVATION(FEET) = 2150.00
  STREET LENGTH(FEET) =   430.92   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.67

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     149.09
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
```



```
    STREET FLOW DEPTH(FEET) =  0.68
    HALFSTREET FLOOD WIDTH(FEET) =   27.23
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.58
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.56
  STREET FLOW TRAVEL TIME(MIN.) =   0.75   Tc(MIN.) =  29.80
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.878
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.71      0.61      1.00    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.80      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.00      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.77
  SUBAREA AREA(ACRES) =    5.51      SUBAREA RUNOFF(CFS) =    6.65
  EFFECTIVE AREA(ACRES) =    123.88    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =    123.88        PEAK FLOW RATE(CFS) =     149.16

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.68   HALFSTREET FLOOD WIDTH(FEET) =  27.23
  FLOW VELOCITY(FEET/SEC.) =  9.59   DEPTH*VELOCITY(FT*FT/SEC.) =   6.56

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.67
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.97
  PIPE-FLOW(CFS) =     50.23
  PIPEFLOW TRAVEL TIME(MIN.) =   0.45    Tc(MIN.) =  29.50
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.890
  SUBAREA AREA(ACRES) =    5.51      SUBAREA RUNOFF(CFS) =    6.70
  TOTAL AREA(ACRES) =    123.88        PEAK FLOW RATE(CFS) =    150.44

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  100.21
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.61
    HALFSTREET FLOOD WIDTH(FEET) =   23.39
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.59
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.22
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20309.00 =  5439.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020309.0 TO NODE LR020310.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
================================================================================
 UPSTREAM ELEVATION(FEET) = 2150.00  DOWNSTREAM ELEVATION(FEET) = 2140.00
 STREET LENGTH(FEET) =   330.10   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.80

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     153.64
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.77
   HALFSTREET FLOOD WIDTH(FEET) =   31.26
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.58
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.80
 STREET FLOW TRAVEL TIME(MIN.) =   0.73   Tc(MIN.) =  30.22
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.862
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        3.69      0.75      0.70    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.85      0.61      1.00    66
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.79      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.72
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.73
 SUBAREA AREA(ACRES) =    5.33      SUBAREA RUNOFF(CFS) =    6.41
 EFFECTIVE AREA(ACRES) =    129.21    AREA-AVERAGED Fm(INCH/HR) =  0.54
 AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.81
 TOTAL AREA(ACRES) =    129.21        PEAK FLOW RATE(CFS) =     153.79

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.77   HALFSTREET FLOOD WIDTH(FEET) =  31.26
 FLOW VELOCITY(FEET/SEC.) =  7.59   DEPTH*VELOCITY(FT*FT/SEC.) =   5.80
 ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
 ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
 ASSUME FULL-FLOWING PIPELINE
 PIPE-FLOW VELOCITY(FEET/SEC.) =  13.40
 PIPE-FLOW(CFS) =     65.82
 PIPEFLOW TRAVEL TIME(MIN.) =   0.41    Tc(MIN.) =  29.91
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.874
 SUBAREA AREA(ACRES) =    5.33      SUBAREA RUNOFF(CFS) =    6.46
 TOTAL AREA(ACRES) =    129.21        PEAK FLOW RATE(CFS) =    155.16

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
```



```
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   89.34
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.65
   HALFSTREET FLOOD WIDTH(FEET) =   25.34
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.58
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.26
 LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20310.00 =  5769.89 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020310.0 TO NODE LR020311.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2140.00  DOWNSTREAM ELEVATION(FEET) = 2100.00
 STREET LENGTH(FEET) =   329.50   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.56

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     158.21
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.62
   HALFSTREET FLOOD WIDTH(FEET) =   24.18
   AVERAGE FLOW VELOCITY(FEET/SEC.) =   12.73
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.94
 STREET FLOW TRAVEL TIME(MIN.) =   0.43   Tc(MIN.) =  30.34
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.858
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        2.87      0.75      0.70    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        1.50      0.61      1.00    66
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.78      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.70
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.77
 SUBAREA AREA(ACRES) =    5.15      SUBAREA RUNOFF(CFS) =    6.11
 EFFECTIVE AREA(ACRES) =    134.36    AREA-AVERAGED Fm(INCH/HR) =  0.54
 AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.81
 TOTAL AREA(ACRES) =    134.36        PEAK FLOW RATE(CFS) =     159.41

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50
```

```
  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.62   HALFSTREET FLOOD WIDTH(FEET) =  24.24
  FLOW VELOCITY(FEET/SEC.) = 12.77   DEPTH*VELOCITY(FT*FT/SEC.) =   7.98

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.56
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  23.11
  PIPE-FLOW(CFS) =     72.66
  PIPEFLOW TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =  30.14
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.865
  SUBAREA AREA(ACRES) =    5.15      SUBAREA RUNOFF(CFS) =    6.15
  TOTAL AREA(ACRES) =    134.36        PEAK FLOW RATE(CFS) =    160.27

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   87.61
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.53
    HALFSTREET FLOOD WIDTH(FEET) =   19.48
    AVERAGE FLOW VELOCITY(FEET/SEC.) =   10.53
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.58
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20311.00 =  6099.39 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020311.0 TO NODE LR020312.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2100.00  DOWNSTREAM ELEVATION(FEET) = 2060.00
  STREET LENGTH(FEET) =   476.59   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.61

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     166.40
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.67
    HALFSTREET FLOOD WIDTH(FEET) =   26.44
    AVERAGE FLOW VELOCITY(FEET/SEC.) =   11.31
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.57
  STREET FLOW TRAVEL TIME(MIN.) =   0.70   Tc(MIN.) =  30.85
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  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.839
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        4.27      0.75       0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        5.25      0.61       1.00    66
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        1.13      0.75       0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.84
  SUBAREA AREA(ACRES) =   10.65      SUBAREA RUNOFF(CFS) =   12.26
  EFFECTIVE AREA(ACRES) =    145.01    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =    145.01        PEAK FLOW RATE(CFS) =     169.44

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.67   HALFSTREET FLOOD WIDTH(FEET) =  26.62
  FLOW VELOCITY(FEET/SEC.) = 11.37   DEPTH*VELOCITY(FT*FT/SEC.) =   7.64

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.61
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.78
  PIPE-FLOW(CFS) =     82.71
  PIPEFLOW TRAVEL TIME(MIN.) =   0.38    Tc(MIN.) =  30.53
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.851
  SUBAREA AREA(ACRES) =   10.65      SUBAREA RUNOFF(CFS) =   12.37
  TOTAL AREA(ACRES) =    145.01        PEAK FLOW RATE(CFS) =    170.95

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   88.23
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.56
    HALFSTREET FLOOD WIDTH(FEET) =   20.88
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.33
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.20
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20312.00 =  6575.98 FEET.

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  FLOW PROCESS FROM NODE LR020312.0 TO NODE LR020313.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2060.00  DOWNSTREAM ELEVATION(FEET) = 2040.00
  STREET LENGTH(FEET) =   500.29   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00
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DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.74

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     176.96
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.77
  HALFSTREET FLOOD WIDTH(FEET) =   31.32
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.70
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.66
STREET FLOW TRAVEL TIME(MIN.) =   0.96   Tc(MIN.) =  31.49
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.817
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"2 DWELLINGS/ACRE"         B        6.45      0.75      0.70    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        1.19      0.75      0.60    56
NATURAL FAIR COVER
"OPEN BRUSH"               B        2.82      0.61      1.00    66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.70
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.77
SUBAREA AREA(ACRES) =   10.46      SUBAREA RUNOFF(CFS) =   12.03
EFFECTIVE AREA(ACRES) =    155.47    AREA-AVERAGED Fm(INCH/HR) =  0.54
AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.81
TOTAL AREA(ACRES) =    155.47        PEAK FLOW RATE(CFS) =     178.53

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.77   HALFSTREET FLOOD WIDTH(FEET) =  31.38
FLOW VELOCITY(FEET/SEC.) =  8.74   DEPTH*VELOCITY(FT*FT/SEC.) =   6.71

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.74
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  16.40
PIPE-FLOW(CFS) =     97.49
PIPEFLOW TRAVEL TIME(MIN.) =   0.51    Tc(MIN.) =  31.03
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.833
SUBAREA AREA(ACRES) =   10.46      SUBAREA RUNOFF(CFS) =   12.17
TOTAL AREA(ACRES) =    155.47        PEAK FLOW RATE(CFS) =    180.74

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50
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  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   83.25
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.61
    HALFSTREET FLOOD WIDTH(FEET) =   23.39
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.13
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.34
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20313.00 =  7076.27 FEET.

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  FLOW PROCESS FROM NODE LR020313.0 TO NODE LR020314.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2040.00  DOWNSTREAM ELEVATION(FEET) = 2020.00
  STREET LENGTH(FEET) =   462.82   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.73

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     186.74
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.77
    HALFSTREET FLOOD WIDTH(FEET) =   31.50
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.07
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.99
  STREET FLOW TRAVEL TIME(MIN.) =   0.85   Tc(MIN.) =  31.88
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.803
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.76      0.61      1.00    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.77      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.10      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.80
  SUBAREA AREA(ACRES) =   10.63      SUBAREA RUNOFF(CFS) =   12.01
  EFFECTIVE AREA(ACRES) =    166.10    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =    166.10        PEAK FLOW RATE(CFS) =     188.62

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.32
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  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.77   HALFSTREET FLOOD WIDTH(FEET) =  31.63
  FLOW VELOCITY(FEET/SEC.) =  9.10   DEPTH*VELOCITY(FT*FT/SEC.) =   7.03

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.73
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.05
  PIPE-FLOW(CFS) =    101.36
  PIPEFLOW TRAVEL TIME(MIN.) =   0.45    Tc(MIN.) =  31.49
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.817
  SUBAREA AREA(ACRES) =   10.63      SUBAREA RUNOFF(CFS) =   12.14
  TOTAL AREA(ACRES) =    166.10        PEAK FLOW RATE(CFS) =    190.66

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.32
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   89.30
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.61
    HALFSTREET FLOOD WIDTH(FEET) =   23.69
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.47
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.58
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20314.00 =  7539.09 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020314.0 TO NODE LR020315.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2020.00  DOWNSTREAM ELEVATION(FEET) = 1980.00
  STREET LENGTH(FEET) =   511.41   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.62

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     195.88
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.71
    HALFSTREET FLOOD WIDTH(FEET) =   28.57
    AVERAGE FLOW VELOCITY(FEET/SEC.) =   11.48
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    8.17
  STREET FLOW TRAVEL TIME(MIN.) =   0.74   Tc(MIN.) =  32.23
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.792
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  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.85      0.75       0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.24      0.75       0.60    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.05      0.61       1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.73
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.72
  SUBAREA AREA(ACRES) =    9.14      SUBAREA RUNOFF(CFS) =   10.43
  EFFECTIVE AREA(ACRES) =    175.24    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =    175.24        PEAK FLOW RATE(CFS) =     197.32

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.01

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.71   HALFSTREET FLOOD WIDTH(FEET) =  28.63
  FLOW VELOCITY(FEET/SEC.) = 11.52   DEPTH*VELOCITY(FT*FT/SEC.) =   8.21

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.62
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  21.53
  PIPE-FLOW(CFS) =    105.75
  PIPEFLOW TRAVEL TIME(MIN.) =   0.40    Tc(MIN.) =  31.88
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.803
  SUBAREA AREA(ACRES) =    9.14      SUBAREA RUNOFF(CFS) =   10.52
  TOTAL AREA(ACRES) =    175.24        PEAK FLOW RATE(CFS) =    199.16

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.01
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   93.40
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.57
    HALFSTREET FLOOD WIDTH(FEET) =   21.55
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.32
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.32
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20315.00 =  8050.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020315.0 TO NODE LR020316.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1980.00  DOWNSTREAM ELEVATION(FEET) = 1950.00
  STREET LENGTH(FEET) =   522.61   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00
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DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.67

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     203.35
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.76
  HALFSTREET FLOOD WIDTH(FEET) =   30.77
  AVERAGE FLOW VELOCITY(FEET/SEC.) =   10.34
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.81
STREET FLOW TRAVEL TIME(MIN.) =   0.84   Tc(MIN.) =  32.73
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.775
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"2 DWELLINGS/ACRE"         B        6.12      0.75      0.70    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        1.25      0.75      0.60    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
SUBAREA AREA(ACRES) =    7.37      SUBAREA RUNOFF(CFS) =    8.39
EFFECTIVE AREA(ACRES) =    182.61    AREA-AVERAGED Fm(INCH/HR) =  0.54
AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.80
TOTAL AREA(ACRES) =    182.61        PEAK FLOW RATE(CFS) =     203.13

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.62

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.76   HALFSTREET FLOOD WIDTH(FEET) =  30.77
FLOW VELOCITY(FEET/SEC.) = 10.33   DEPTH*VELOCITY(FT*FT/SEC.) =   7.80

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.67
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  19.65
PIPE-FLOW(CFS) =    116.82
PIPEFLOW TRAVEL TIME(MIN.) =   0.44    Tc(MIN.) =  32.33
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.788
SUBAREA AREA(ACRES) =    7.37      SUBAREA RUNOFF(CFS) =    8.47
TOTAL AREA(ACRES) =    182.61        PEAK FLOW RATE(CFS) =    205.29

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.62
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   88.46
  ***STREET FLOWING FULL***
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  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.59
  HALFSTREET FLOOD WIDTH(FEET) =   22.35
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.25
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.84
LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20316.00 =  8573.11 FEET.

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 FLOW PROCESS FROM NODE LR020316.0 TO NODE LR020317.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1950.00  DOWNSTREAM ELEVATION(FEET) = 1890.00
 STREET LENGTH(FEET) =   743.58   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.62

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     208.47
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.72
  HALFSTREET FLOOD WIDTH(FEET) =   29.06
  AVERAGE FLOW VELOCITY(FEET/SEC.) =   11.83
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    8.53
 STREET FLOW TRAVEL TIME(MIN.) =   1.05   Tc(MIN.) =  33.37
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.755
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        4.10      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.55      0.75      0.60    56
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        0.01      0.75      0.90    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
 SUBAREA AREA(ACRES) =    5.66      SUBAREA RUNOFF(CFS) =    6.37
 EFFECTIVE AREA(ACRES) =    188.27    AREA-AVERAGED Fm(INCH/HR) =  0.54
 AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.79
 TOTAL AREA(ACRES) =    188.27        PEAK FLOW RATE(CFS) =     206.09

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.72   HALFSTREET FLOOD WIDTH(FEET) =  28.94
 FLOW VELOCITY(FEET/SEC.) = 11.79   DEPTH*VELOCITY(FT*FT/SEC.) =   8.47
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 *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.62
 SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
 ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
 ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
 ASSUME FULL-FLOWING PIPELINE
 PIPE-FLOW VELOCITY(FEET/SEC.) =  23.30
 PIPE-FLOW(CFS) =    138.50
 PIPEFLOW TRAVEL TIME(MIN.) =   0.53    Tc(MIN.) =  32.86
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.771
 SUBAREA AREA(ACRES) =    5.66      SUBAREA RUNOFF(CFS) =    6.46
 TOTAL AREA(ACRES) =    188.27        PEAK FLOW RATE(CFS) =    208.88

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   70.38
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.53
   HALFSTREET FLOOD WIDTH(FEET) =   19.36
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.56
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.51
 LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20317.00 =  9316.69 FEET.

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 FLOW PROCESS FROM NODE LR020317.0 TO NODE LR020318.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1890.00  DOWNSTREAM ELEVATION(FEET) = 1860.00
 STREET LENGTH(FEET) =   640.63   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.71

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     215.48
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.80
   HALFSTREET FLOOD WIDTH(FEET) =   32.79
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.69
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.71
 STREET FLOW TRAVEL TIME(MIN.) =   1.10   Tc(MIN.) =  33.96
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.736
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
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 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.10      0.75      0.60    56
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        0.01      0.75      0.90    56
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B       10.92      0.75      0.70    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
 SUBAREA AREA(ACRES) =   12.03      SUBAREA RUNOFF(CFS) =   13.20
 EFFECTIVE AREA(ACRES) =    200.30    AREA-AVERAGED Fm(INCH/HR) =  0.54
 AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.79
 TOTAL AREA(ACRES) =    200.30        PEAK FLOW RATE(CFS) =     216.20

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.80   HALFSTREET FLOOD WIDTH(FEET) =  32.85
 FLOW VELOCITY(FEET/SEC.) =  9.69   DEPTH*VELOCITY(FT*FT/SEC.) =   7.72

 *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.71
 SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
 ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
 ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
 ASSUME FULL-FLOWING PIPELINE
 PIPE-FLOW VELOCITY(FEET/SEC.) =  19.84
 PIPE-FLOW(CFS) =    164.74
 PIPEFLOW TRAVEL TIME(MIN.) =   0.54    Tc(MIN.) =  33.40
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.754
 SUBAREA AREA(ACRES) =   12.03      SUBAREA RUNOFF(CFS) =   13.39
 TOTAL AREA(ACRES) =    200.30        PEAK FLOW RATE(CFS) =    219.36

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   54.62
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.53
   HALFSTREET FLOOD WIDTH(FEET) =   19.48
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.56
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.48
 LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20318.00 =  9957.32 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020318.0 TO NODE LR020319.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1860.00  DOWNSTREAM ELEVATION(FEET) = 1835.00
 STREET LENGTH(FEET) =   624.00   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
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SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.78

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     302.99
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.94
  HALFSTREET FLOOD WIDTH(FEET) =   39.49
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.79
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    9.16
STREET FLOW TRAVEL TIME(MIN.) =   1.06   Tc(MIN.) =  34.46
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.721
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        1.46      0.75      0.60    56
RESIDENTIAL
".4 DWELLING/ACRE"         B        9.05      0.75      0.90    56
RESIDENTIAL
"2 DWELLINGS/ACRE"         B      128.82      0.75      0.70    56
NATURAL FAIR COVER
"OPEN BRUSH"               B       18.27      0.61      1.00    66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.73
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.75
SUBAREA AREA(ACRES) =  157.60      SUBAREA RUNOFF(CFS) =  167.26
EFFECTIVE AREA(ACRES) =    357.90    AREA-AVERAGED Fm(INCH/HR) =  0.54
AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.77
TOTAL AREA(ACRES) =    357.90        PEAK FLOW RATE(CFS) =     380.73

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.68

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.00   HALFSTREET FLOOD WIDTH(FEET) =  42.91
FLOW VELOCITY(FEET/SEC.) = 10.40   DEPTH*VELOCITY(FT*FT/SEC.) =  10.45

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.78
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
DEPTH OF FLOW IN  45.0 INCH PIPE IS  36.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  23.03
PIPE-FLOW(CFS) =    219.36
PIPEFLOW TRAVEL TIME(MIN.) =   0.45    Tc(MIN.) =  33.85
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.740
SUBAREA AREA(ACRES) =  157.60      SUBAREA RUNOFF(CFS) =  169.89
TOTAL AREA(ACRES) =    357.90        PEAK FLOW RATE(CFS) =    386.71

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.68
*NOTE: STREET-CAPACITY MAY BE EXCEEDED*
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
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  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  167.35
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.79
    HALFSTREET FLOOD WIDTH(FEET) =   32.04
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.24
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.49
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =   624.0 FT WITH ELEVATION-DROP =  25.0 FT, IS  427.3 CFS,
         WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  20319.00
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20319.00 = 10581.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020319.0 TO NODE LR020330.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1835.00  DOWNSTREAM ELEVATION(FEET) = 1813.00
  STREET LENGTH(FEET) =   597.75   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.79

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     388.48
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.03
    HALFSTREET FLOOD WIDTH(FEET) =   43.94
    AVERAGE FLOW VELOCITY(FEET/SEC.) =   10.12
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   10.38
  STREET FLOW TRAVEL TIME(MIN.) =   0.98   Tc(MIN.) =  34.83
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.710
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.71      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.91      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.84
  SUBAREA AREA(ACRES) =    3.62      SUBAREA RUNOFF(CFS) =    3.52
  EFFECTIVE AREA(ACRES) =    361.52    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.77
  TOTAL AREA(ACRES) =    361.52        PEAK FLOW RATE(CFS) =     386.71
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
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  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.02   HALFSTREET FLOOD WIDTH(FEET) =  43.88
  FLOW VELOCITY(FEET/SEC.) = 10.10   DEPTH*VELOCITY(FT*FT/SEC.) =  10.35

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.79
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.20
  PIPE-FLOW(CFS) =    254.09
  PIPEFLOW TRAVEL TIME(MIN.) =   0.49    Tc(MIN.) =  34.34
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.725
  SUBAREA AREA(ACRES) =    3.62      SUBAREA RUNOFF(CFS) =    3.57
  TOTAL AREA(ACRES) =    361.52        PEAK FLOW RATE(CFS) =    386.71
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  132.62
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.75
    HALFSTREET FLOOD WIDTH(FEET) =   30.09
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.42
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.55
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20330.00 = 11179.07 FEET.

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  FLOW PROCESS FROM NODE LR020330.0 TO NODE LR020330.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  34.34
  RAINFALL INTENSITY(INCH/HR) =   1.72
  AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.70
  AREA-AVERAGED Ap =  0.77
  EFFECTIVE STREAM AREA(ACRES) =   361.52
  TOTAL STREAM AREA(ACRES) =   361.52
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    386.71

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  FLOW PROCESS FROM NODE LR020320.0 TO NODE LR020321.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1020.45
  ELEVATION DATA: UPSTREAM(FEET) =   2240.00  DOWNSTREAM(FEET) =   2180.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   19.882
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  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.394
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                 B        9.71      0.61      1.00    66   19.88
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA RUNOFF(CFS) =     15.56
  TOTAL AREA(ACRES) =      9.71   PEAK FLOW RATE(CFS) =     15.56

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020321.0 TO NODE LR020322.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2180.00  DOWNSTREAM(FEET) =   2160.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   548.49   CHANNEL SLOPE =  0.0365
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     15.56
  FLOW VELOCITY(FEET/SEC.) =   2.11   FLOW DEPTH(FEET) =   0.38
  TRAVEL TIME(MIN.) =   4.34   Tc(MIN.) =  24.22
  LONGEST FLOWPATH FROM NODE  20320.00 TO NODE  20322.00 =  1568.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020322.0 TO NODE LR020322.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  24.22
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.127
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                 B       15.34      0.61      1.00    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"           B        0.02      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =   15.36      SUBAREA RUNOFF(CFS) =   20.91
  EFFECTIVE AREA(ACRES) =     25.07   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     25.07       PEAK FLOW RATE(CFS) =      34.13

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.45; 30M = 0.92; 1HR = 1.21; 3HR = 2.00; 6HR = 2.75; 24HR = 7.29

****************************************************************************
  FLOW PROCESS FROM NODE LR020322.0 TO NODE LR020323.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
```

```
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2160.00  DOWNSTREAM(FEET) =   2150.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   479.58   CHANNEL SLOPE =  0.0209
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     34.13
  FLOW VELOCITY(FEET/SEC.) =   2.06   FLOW DEPTH(FEET) =   0.58
  TRAVEL TIME(MIN.) =   3.87   Tc(MIN.) =  28.09
  LONGEST FLOWPATH FROM NODE  20320.00 TO NODE  20323.00 =  2048.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020323.0 TO NODE LR020323.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN) =  28.09
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.946
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       11.74      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        8.32      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.68
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.82
  SUBAREA AREA(ACRES) =   20.06      SUBAREA RUNOFF(CFS) =   24.99
  EFFECTIVE AREA(ACRES) =     45.13   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.64  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     45.13       PEAK FLOW RATE(CFS) =      55.04

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.45; 30M = 0.92; 1HR = 1.21; 3HR = 2.00; 6HR = 2.75; 24HR = 6.70

****************************************************************************
  FLOW PROCESS FROM NODE LR020323.0 TO NODE LR020324.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2150.00  DOWNSTREAM(FEET) =   2100.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   676.85   CHANNEL SLOPE =  0.0739
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     55.04
  FLOW VELOCITY(FEET/SEC.) =   3.79   FLOW DEPTH(FEET) =   0.54
  TRAVEL TIME(MIN.) =   2.98   Tc(MIN.) =  31.07
  LONGEST FLOWPATH FROM NODE  20320.00 TO NODE  20324.00 =  2725.37 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020324.0 TO NODE LR020324.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN) =  31.07
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.832
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```



```
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       14.74      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   14.74      SUBAREA RUNOFF(CFS) =   17.35
  EFFECTIVE AREA(ACRES) =     59.87   AREA-AVERAGED Fm(INCH/HR) =  0.57
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =     59.87       PEAK FLOW RATE(CFS) =      67.76

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.93; 1HR = 1.23; 3HR = 2.02; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020324.0 TO NODE LR020325.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2100.00  DOWNSTREAM(FEET) =   2080.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   631.62   CHANNEL SLOPE =  0.0317
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     67.76
  FLOW VELOCITY(FEET/SEC.) =   2.90   FLOW DEPTH(FEET) =   0.68
  TRAVEL TIME(MIN.) =   3.63   Tc(MIN.) =  34.70
  LONGEST FLOWPATH FROM NODE  20320.00 TO NODE  20325.00 =  3356.99 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020325.0 TO NODE LR020325.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN) =  34.70
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.714
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       10.91      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   10.91      SUBAREA RUNOFF(CFS) =   11.69
  EFFECTIVE AREA(ACRES) =     70.78   AREA-AVERAGED Fm(INCH/HR) =  0.57
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     70.78       PEAK FLOW RATE(CFS) =      73.11

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020325.0 TO NODE LR020326.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2080.00  DOWNSTREAM(FEET) =   2050.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   686.64   CHANNEL SLOPE =  0.0437
```

```
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     73.11
  FLOW VELOCITY(FEET/SEC.) =   3.29   FLOW DEPTH(FEET) =   0.67
  TRAVEL TIME(MIN.) =   3.48   Tc(MIN.) =  38.18
  LONGEST FLOWPATH FROM NODE  20320.00 TO NODE  20326.00 =  4043.63 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020326.0 TO NODE LR020326.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  38.18
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.618
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B       48.19      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.06      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   48.25      SUBAREA RUNOFF(CFS) =   47.55
  EFFECTIVE AREA(ACRES) =    119.03   AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.78
  TOTAL AREA(ACRES) =    119.03       PEAK FLOW RATE(CFS) =     114.58

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.44; 30M = 0.91; 1HR = 1.20; 3HR = 2.00; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020326.0 TO NODE LR020327.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2050.00  DOWNSTREAM(FEET) =   1990.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1389.79   CHANNEL SLOPE =  0.0432
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    114.58
  FLOW VELOCITY(FEET/SEC.) =   3.68   FLOW DEPTH(FEET) =   0.79
  TRAVEL TIME(MIN.) =   6.29   Tc(MIN.) =  44.47
  LONGEST FLOWPATH FROM NODE  20320.00 TO NODE  20327.00 =  5433.42 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020327.0 TO NODE LR020327.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  44.47
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.477
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B       16.19      0.75      0.70    56
```



```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   16.19      SUBAREA RUNOFF(CFS) =   13.89
  EFFECTIVE AREA(ACRES) =    135.22   AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.77
  TOTAL AREA(ACRES) =    135.22       PEAK FLOW RATE(CFS) =     114.58
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020327.0 TO NODE LR020328.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1990.00  DOWNSTREAM(FEET) =   1920.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1079.99   CHANNEL SLOPE =  0.0648
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    114.58
  FLOW VELOCITY(FEET/SEC.) =   4.31   FLOW DEPTH(FEET) =   0.73
  TRAVEL TIME(MIN.) =   4.18   Tc(MIN.) =  48.65
  LONGEST FLOWPATH FROM NODE  20320.00 TO NODE  20328.00 =  6513.41 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020328.0 TO NODE LR020328.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  48.65
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.399
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B       25.33      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.27      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   25.60      SUBAREA RUNOFF(CFS) =   20.20
  EFFECTIVE AREA(ACRES) =    160.82   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.76
  TOTAL AREA(ACRES) =    160.82       PEAK FLOW RATE(CFS) =     124.08

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020328.0 TO NODE LR020329.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1920.00  DOWNSTREAM ELEVATION(FEET) = 1870.00
  STREET LENGTH(FEET) =  1075.25   CURB HEIGHT(INCHES) =  6.0
```

```
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.71

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     129.32
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.68
    HALFSTREET FLOOD WIDTH(FEET) =   26.86
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.53
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.78
  STREET FLOW TRAVEL TIME(MIN.) =   2.10   Tc(MIN.) =  50.75
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.364
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       13.84      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   13.84      SUBAREA RUNOFF(CFS) =   10.47
  EFFECTIVE AREA(ACRES) =    174.66    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.76
  TOTAL AREA(ACRES) =    174.66        PEAK FLOW RATE(CFS) =     129.48

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.68   HALFSTREET FLOOD WIDTH(FEET) =  26.93
  FLOW VELOCITY(FEET/SEC.) =  8.50   DEPTH*VELOCITY(FT*FT/SEC.) =   5.77
  LONGEST FLOWPATH FROM NODE  20320.00 TO NODE  20329.00 =  7588.66 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020329.0 TO NODE LR020330.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1870.00  DOWNSTREAM ELEVATION(FEET) = 1813.00
  STREET LENGTH(FEET) =   927.52   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
```



```
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.66

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     135.57
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.66
  HALFSTREET FLOOD WIDTH(FEET) =   25.95
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.55
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.29
STREET FLOW TRAVEL TIME(MIN.) =   1.62   Tc(MIN.) =  52.37
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.339
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        0.48      0.75      0.60    56
RESIDENTIAL
".4 DWELLING/ACRE"         B        5.88      0.75      0.90    56
RESIDENTIAL
"2 DWELLINGS/ACRE"         B       11.27      0.75      0.70    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.76
SUBAREA AREA(ACRES) =   17.63      SUBAREA RUNOFF(CFS) =   12.18
EFFECTIVE AREA(ACRES) =    192.29    AREA-AVERAGED Fm(INCH/HR) =  0.54
AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.76
TOTAL AREA(ACRES) =    192.29        PEAK FLOW RATE(CFS) =     137.65

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.66   HALFSTREET FLOOD WIDTH(FEET) =  26.13
FLOW VELOCITY(FEET/SEC.) =  9.57   DEPTH*VELOCITY(FT*FT/SEC.) =   6.34

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.66
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  16.44
PIPE-FLOW(CFS) =     51.70
PIPEFLOW TRAVEL TIME(MIN.) =   0.94    Tc(MIN.) =  51.69
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.349
SUBAREA AREA(ACRES) =   17.63      SUBAREA RUNOFF(CFS) =   12.34
TOTAL AREA(ACRES) =    192.29        PEAK FLOW RATE(CFS) =    139.48

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   87.78
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.58
  HALFSTREET FLOOD WIDTH(FEET) =   22.04
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.40
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.88
```

```
  LONGEST FLOWPATH FROM NODE  20320.00 TO NODE  20330.00 =  8516.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020330.0 TO NODE LR020330.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  51.69
  RAINFALL INTENSITY(INCH/HR) =   1.35
  AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.72
  AREA-AVERAGED Ap =  0.76
  EFFECTIVE STREAM AREA(ACRES) =   192.29
  TOTAL STREAM AREA(ACRES) =   192.29
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    139.48

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    386.71  34.34    1.725  0.70( 0.54) 0.77   361.5 LR020300.0
      2    139.48  51.69    1.349  0.72( 0.54) 0.76   192.3 LR020320.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    522.52  34.34    1.725  0.71( 0.54) 0.77   489.3 LR020300.0
      2    403.70  51.69    1.349  0.71( 0.54) 0.77   553.8 LR020320.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    522.52    Tc(MIN.) =    34.34
  EFFECTIVE AREA(ACRES) =   489.27   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.77
  TOTAL AREA(ACRES) =    553.81
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20330.00 = 11179.07 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020330.0 TO NODE LR020349.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1813.00  DOWNSTREAM ELEVATION(FEET) = 1785.00
  STREET LENGTH(FEET) =  1334.61   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
```



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Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.91

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     529.52
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  1.24
  HALFSTREET FLOOD WIDTH(FEET) =   54.87
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.83
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   10.98
STREET FLOW TRAVEL TIME(MIN.) =   2.52   Tc(MIN.) =  36.86
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.653
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        1.05      0.75      0.60    56
RESIDENTIAL
"2 DWELLINGS/ACRE"         B       12.65      0.75      0.70    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
SUBAREA AREA(ACRES) =   13.70      SUBAREA RUNOFF(CFS) =   14.00
EFFECTIVE AREA(ACRES) =    502.97    AREA-AVERAGED Fm(INCH/HR) =  0.54
AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.76
TOTAL AREA(ACRES) =    567.51        PEAK FLOW RATE(CFS) =     522.52
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.24   HALFSTREET FLOOD WIDTH(FEET) =  54.63
FLOW VELOCITY(FEET/SEC.) =  8.79   DEPTH*VELOCITY(FT*FT/SEC.) =  10.89

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.91
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  17.70
PIPE-FLOW(CFS) =    347.86
PIPEFLOW TRAVEL TIME(MIN.) =   1.26    Tc(MIN.) =  35.60
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.688
SUBAREA AREA(ACRES) =   13.70      SUBAREA RUNOFF(CFS) =   14.43
TOTAL AREA(ACRES) =    567.51        PEAK FLOW RATE(CFS) =    522.52
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  174.67
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.87
  HALFSTREET FLOOD WIDTH(FEET) =   36.38
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.66
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.82
```

```
 LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20349.00 = 12513.68 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020349.0 TO NODE LR020349.0 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  35.60
 RAINFALL INTENSITY(INCH/HR) =   1.69
 AREA-AVERAGED Fm(INCH/HR) =  0.54
 AREA-AVERAGED Fp(INCH/HR) =  0.71
 AREA-AVERAGED Ap =  0.76
 EFFECTIVE STREAM AREA(ACRES) =   502.97
 TOTAL STREAM AREA(ACRES) =   567.51
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    522.52

****************************************************************************
 FLOW PROCESS FROM NODE LR020340.0 TO NODE LR020341.0 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   998.88
 ELEVATION DATA: UPSTREAM(FEET) =   2120.00  DOWNSTREAM(FEET) =   2080.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.422
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.175
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        6.76      0.75      0.70    56   13.21
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.12      0.75      0.60    56   12.42
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
 SUBAREA RUNOFF(CFS) =     18.88
 TOTAL AREA(ACRES) =      7.88   PEAK FLOW RATE(CFS) =     18.88

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.43; 30M = 0.88; 1HR = 1.16; 3HR = 1.97; 6HR = 2.75; 24HR = 6.50

****************************************************************************
 FLOW PROCESS FROM NODE LR020341.0 TO NODE LR020342.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   2080.00  DOWNSTREAM(FEET) =   2055.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   397.26   CHANNEL SLOPE =  0.0629
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
 MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
 CHANNEL FLOW THRU SUBAREA(CFS) =     18.88
 FLOW VELOCITY(FEET/SEC.) =   2.74   FLOW DEPTH(FEET) =   0.37
 TRAVEL TIME(MIN.) =   2.41   Tc(MIN.) =  14.84
```



```
 LONGEST FLOWPATH FROM NODE  20340.00 TO NODE  20342.00 =  1396.14 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020342.0 TO NODE LR020342.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  14.84
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.854
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        4.25      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.25      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
 SUBAREA AREA(ACRES) =     4.50      SUBAREA RUNOFF(CFS) =     9.45
 EFFECTIVE AREA(ACRES) =     12.38   AREA-AVERAGED Fm(INCH/HR) =  0.52
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
 TOTAL AREA(ACRES) =     12.38       PEAK FLOW RATE(CFS) =      26.06

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.43; 30M = 0.88; 1HR = 1.16; 3HR = 1.97; 6HR = 2.75; 24HR = 6.50

****************************************************************************
 FLOW PROCESS FROM NODE LR020342.0 TO NODE LR020343.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   2055.00  DOWNSTREAM(FEET) =   2035.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   438.38   CHANNEL SLOPE =  0.0456
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
 MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
 CHANNEL FLOW THRU SUBAREA(CFS) =     26.06
 FLOW VELOCITY(FEET/SEC.) =   2.60   FLOW DEPTH(FEET) =   0.45
 TRAVEL TIME(MIN.) =   2.80   Tc(MIN.) =  17.64
 LONGEST FLOWPATH FROM NODE  20340.00 TO NODE  20343.00 =  1834.52 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020343.0 TO NODE LR020343.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  17.64
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.572
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        5.37      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.37      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
 SUBAREA AREA(ACRES) =     5.74      SUBAREA RUNOFF(CFS) =   10.61
```

```
  EFFECTIVE AREA(ACRES) =     18.12   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     18.12       PEAK FLOW RATE(CFS) =      33.53

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.44; 30M = 0.89; 1HR = 1.18; 3HR = 1.98; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020343.0 TO NODE LR020344.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2035.00  DOWNSTREAM(FEET) =   2015.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   496.72   CHANNEL SLOPE =  0.0403
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     33.53
  FLOW VELOCITY(FEET/SEC.) =   2.61   FLOW DEPTH(FEET) =   0.51
  TRAVEL TIME(MIN.) =   3.17   Tc(MIN.) =  20.81
  LONGEST FLOWPATH FROM NODE  20340.00 TO NODE  20344.00 =  2331.24 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020344.0 TO NODE LR020344.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  20.81
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.330
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.06      0.75      0.70    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.77      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.07      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.81
  SUBAREA AREA(ACRES) =    4.90      SUBAREA RUNOFF(CFS) =    7.60
  EFFECTIVE AREA(ACRES) =     23.02   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.72
  TOTAL AREA(ACRES) =     23.02       PEAK FLOW RATE(CFS) =      37.17

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.45; 30M = 0.92; 1HR = 1.21; 3HR = 2.00; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020344.0 TO NODE LR020345.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2015.00  DOWNSTREAM(FEET) =   1980.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   575.06   CHANNEL SLOPE =  0.0609
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
```



```
  CHANNEL FLOW THRU SUBAREA(CFS) =     37.17
  FLOW VELOCITY(FEET/SEC.) =   3.15   FLOW DEPTH(FEET) =   0.49
  TRAVEL TIME(MIN.) =   3.04   Tc(MIN.) =  23.85
  LONGEST FLOWPATH FROM NODE  20340.00 TO NODE  20345.00 =  2906.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020345.0 TO NODE LR020345.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  23.85
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.147
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       12.00      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.27      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        3.29      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.74
  SUBAREA AREA(ACRES) =   15.56      SUBAREA RUNOFF(CFS) =   22.30
  EFFECTIVE AREA(ACRES) =     38.58   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =     38.58       PEAK FLOW RATE(CFS) =      55.68

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020345.0 TO NODE LR020346.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1980.00  DOWNSTREAM(FEET) =   1940.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   558.59   CHANNEL SLOPE =  0.0716
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     55.68
  FLOW VELOCITY(FEET/SEC.) =   3.73   FLOW DEPTH(FEET) =   0.55
  TRAVEL TIME(MIN.) =   2.50   Tc(MIN.) =  26.34
  LONGEST FLOWPATH FROM NODE  20340.00 TO NODE  20346.00 =  3464.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020346.0 TO NODE LR020346.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  26.34
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.022
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        3.53      0.75      0.70    56
```

```
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.62      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        3.41      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.78
  SUBAREA AREA(ACRES) =    7.56      SUBAREA RUNOFF(CFS) =    9.78
  EFFECTIVE AREA(ACRES) =     46.14   AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.74
  TOTAL AREA(ACRES) =     46.14       PEAK FLOW RATE(CFS) =      61.14

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020346.0 TO NODE LR020347.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1940.00  DOWNSTREAM ELEVATION(FEET) = 1890.00
  STREET LENGTH(FEET) =   993.62   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      67.65
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.56
    HALFSTREET FLOOD WIDTH(FEET) =   20.76
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.23
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.02
  STREET FLOW TRAVEL TIME(MIN.) =   2.29   Tc(MIN.) =  28.63
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.924
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.71      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.04      0.75      0.70    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.62      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.71
  SUBAREA AREA(ACRES) =   10.37      SUBAREA RUNOFF(CFS) =   13.03
  EFFECTIVE AREA(ACRES) =     56.51    AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =     56.51        PEAK FLOW RATE(CFS) =      70.07
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  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.56   HALFSTREET FLOOD WIDTH(FEET) =  21.07
  FLOW VELOCITY(FEET/SEC.) =  7.29   DEPTH*VELOCITY(FT*FT/SEC.) =   4.09
  LONGEST FLOWPATH FROM NODE  20340.00 TO NODE  20347.00 =  4458.51 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020347.0 TO NODE LR020348.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1890.00  DOWNSTREAM ELEVATION(FEET) = 1860.00
  STREET LENGTH(FEET) =   874.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.78

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      78.06
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.61
    HALFSTREET FLOOD WIDTH(FEET) =   23.51
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.62
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.04
  STREET FLOW TRAVEL TIME(MIN.) =   2.20   Tc(MIN.) =  30.83
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.840
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.78      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       12.66      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =   13.44      SUBAREA RUNOFF(CFS) =   15.98
  EFFECTIVE AREA(ACRES) =     69.95    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.72
  TOTAL AREA(ACRES) =     69.95        PEAK FLOW RATE(CFS) =      81.80

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.62   HALFSTREET FLOOD WIDTH(FEET) =  23.93
  FLOW VELOCITY(FEET/SEC.) =  6.71   DEPTH*VELOCITY(FT*FT/SEC.) =   4.15
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  LONGEST FLOWPATH FROM NODE  20340.00 TO NODE  20348.00 =  5333.01 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020348.0 TO NODE LR020349.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1860.00  DOWNSTREAM ELEVATION(FEET) = 1785.00
  STREET LENGTH(FEET) =  1082.38   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.64

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     100.73
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.59
    HALFSTREET FLOOD WIDTH(FEET) =   22.65
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.16
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.43
  STREET FLOW TRAVEL TIME(MIN.) =   1.97   Tc(MIN.) =  32.80
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.773
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       33.09      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.55      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   33.64      SUBAREA RUNOFF(CFS) =   37.86
  EFFECTIVE AREA(ACRES) =    103.59    AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.71
  TOTAL AREA(ACRES) =    103.59        PEAK FLOW RATE(CFS) =     115.43

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.62   HALFSTREET FLOOD WIDTH(FEET) =  23.87
  FLOW VELOCITY(FEET/SEC.) =  9.52   DEPTH*VELOCITY(FT*FT/SEC.) =   5.88
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1082.4 FT WITH ELEVATION-DROP =  75.0 FT, IS   84.9 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20349.00
  LONGEST FLOWPATH FROM NODE  20340.00 TO NODE  20349.00 =  6415.39 FEET.

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  FLOW PROCESS FROM NODE LR020349.0 TO NODE LR020349.0 IS CODE =   1
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----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  32.80
  RAINFALL INTENSITY(INCH/HR) =   1.77
  AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.71
  EFFECTIVE STREAM AREA(ACRES) =   103.59
  TOTAL STREAM AREA(ACRES) =   103.59
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    115.43

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    522.52  35.60    1.688  0.71( 0.54) 0.76   503.0 LR020300.0
      1    403.70  52.95    1.330  0.71( 0.54) 0.76   567.5 LR020320.0
      2    115.43  32.80    1.773  0.75( 0.53) 0.71   103.6 LR020340.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    632.54  32.80    1.773  0.71( 0.54) 0.76   567.0 LR020340.0
      2    630.03  35.60    1.688  0.71( 0.54) 0.76   606.6 LR020300.0
      3    477.86  52.95    1.330  0.71( 0.54) 0.76   671.1 LR020320.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    632.54    Tc(MIN.) =    32.80
  EFFECTIVE AREA(ACRES) =   567.03   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.76
  TOTAL AREA(ACRES) =    671.10
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20349.00 = 12513.68 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020349.0 TO NODE LR020349.0 IS CODE =  71
----------------------------------------------------------------------------
  >>>>>PEAK FLOW RATE ESTIMATOR CHANGED TO UNIT-HYDROGRAPH METHOD<<<<<
  >>>>>USING TIME-OF-CONCENTRATION OF LONGEST FLOWPATH<<<<<
============================================================================
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.46;30M= 0.94;1H= 1.24;3H= 2.02;6H= 2.75;24H= 6.83
  S-GRAPH: VALLEY(DEV.)= 76.1%;VALLEY(UNDEV.)/DESERT= 23.9%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.59; LAG(HR) = 0.47; Fm(INCH/HR) = 0.54; Ybar = 0.50
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 1.00; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    671.10
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20349.00 = 12513.68 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0492; Lca/L=0.4,n=.0441; Lca/L=0.5,n=.0405;Lca/L=0.6,n=.0378
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     201.07
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  UNIT-HYDROGRAPH METHOD PEAK FLOW RATE(CFS) =    765.02
  TOTAL PEAK FLOW RATE(CFS) =    765.02 (SOURCE FLOW INCLUDED)
  RATIONAL METHOD PEAK FLOW RATE(CFS) =    632.54
   (UPSTREAM NODE PEAK FLOW RATE(CFS) =    632.54)
  PEAK FLOW RATE(CFS) USED =    765.02

****************************************************************************
  FLOW PROCESS FROM NODE LR020349.0 TO NODE LR020350.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1785.00  DOWNSTREAM ELEVATION(FEET) = 1715.00
  STREET LENGTH(FEET) =  1290.16   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.68

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     798.97
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.21
    HALFSTREET FLOOD WIDTH(FEET) =   53.48
    AVERAGE FLOW VELOCITY(FEET/SEC.) =   13.79
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   16.68
  STREET FLOW TRAVEL TIME(MIN.) =   1.56   Tc(MIN.) =  37.16
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.645
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.52      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       72.05      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.88
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.46;30M= 0.94;1H= 1.24;3H= 2.02;6H= 2.75;24H= 6.80
  S-GRAPH: VALLEY(DEV.)= 68.9%;VALLEY(UNDEV.)/DESERT= 31.1%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.62; LAG(HR) = 0.50; Fm(INCH/HR) = 0.55; Ybar = 0.52
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    747.67
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20350.00 = 12513.68 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0522; Lca/L=0.4,n=.0468; Lca/L=0.5,n=.0430;Lca/L=0.6,n=.0401
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     217.87
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    799.14
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  TOTAL AREA(ACRES) =    747.67        PEAK FLOW RATE(CFS) =     799.14

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.21   HALFSTREET FLOOD WIDTH(FEET) =  53.48
  FLOW VELOCITY(FEET/SEC.) = 13.80   DEPTH*VELOCITY(FT*FT/SEC.) =  16.69

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.68
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  66.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  30.33
  PIPE-FLOW(CFS) =    721.31
  PIPEFLOW TRAVEL TIME(MIN.) =   0.71    Tc(MIN.) =  36.31
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.46;30M= 0.94;1H= 1.24;3H= 2.02;6H= 2.75;24H= 6.80
  S-GRAPH: VALLEY(DEV.)= 68.9%;VALLEY(UNDEV.)/DESERT= 31.1%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.59; LAG(HR) = 0.47; Fm(INCH/HR) = 0.55; Ybar = 0.52
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    747.67
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20350.00 = 13803.84 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0455; Lca/L=0.4,n=.0408; Lca/L=0.5,n=.0375;Lca/L=0.6,n=.0350
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     217.87
  TOTAL AREA(ACRES) =    747.67        PEAK FLOW RATE(CFS) =    816.97

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   95.66
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.61
    HALFSTREET FLOOD WIDTH(FEET) =   23.26
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.28
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.01
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  1290.2 FT WITH ELEVATION-DROP =  70.0 FT, IS  167.9 CFS,
         WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  20350.00

****************************************************************************
  FLOW PROCESS FROM NODE LR020350.0 TO NODE LR020351.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1715.00  DOWNSTREAM ELEVATION(FEET) = 1680.00
  STREET LENGTH(FEET) =  1342.03   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
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INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     851.37
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  1.41
  HALFSTREET FLOOD WIDTH(FEET) =   63.42
  AVERAGE FLOW VELOCITY(FEET/SEC.) =   10.49
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   14.77
STREET FLOW TRAVEL TIME(MIN.) =   2.13   Tc(MIN.) =  38.44
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.612
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        7.14      0.75      0.60    56
RESIDENTIAL
".4 DWELLING/ACRE"         B       72.56      0.75      0.90    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.87
UNIT-HYDROGRAPH DATA:
RAINFALL(INCH): 5M= 0.46;30M= 0.94;1H= 1.24;3H= 2.02;6H= 2.75;24H= 6.77
S-GRAPH: VALLEY(DEV.)= 63.2%;VALLEY(UNDEV.)/DESERT= 36.8%
         MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
Tc(HR) = 0.64; LAG(HR) = 0.51; Fm(INCH/HR) = 0.56; Ybar = 0.53
USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
3HR = 0.99; 6HR = 1.00; 24HR= 1.00
UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    827.37
LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20351.00 = 13803.84 FEET.
 EQUIVALENT BASIN FACTOR APPROXIMATIONS:
 Lca/L=0.3,n=.0495; Lca/L=0.4,n=.0444; Lca/L=0.5,n=.0408;Lca/L=0.6,n=.0381
TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     235.62
UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    842.06
TOTAL AREA(ACRES) =    827.37        PEAK FLOW RATE(CFS) =     842.06

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.40   HALFSTREET FLOOD WIDTH(FEET) =  63.12
FLOW VELOCITY(FEET/SEC.) = 10.47   DEPTH*VELOCITY(FT*FT/SEC.) =  14.69

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.84
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  78.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  23.51
PIPE-FLOW(CFS) =    780.80
```



```
  PIPEFLOW TRAVEL TIME(MIN.) =   0.95    Tc(MIN.) =  37.26
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.46;30M= 0.94;1H= 1.24;3H= 2.02;6H= 2.75;24H= 6.77
  S-GRAPH: VALLEY(DEV.)= 63.2%;VALLEY(UNDEV.)/DESERT= 36.8%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.61; LAG(HR) = 0.48; Fm(INCH/HR) = 0.56; Ybar = 0.53
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    827.37
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20351.00 = 15145.87 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0428; Lca/L=0.4,n=.0384; Lca/L=0.5,n=.0353;Lca/L=0.6,n=.0329
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     235.62
  TOTAL AREA(ACRES) =    827.37        PEAK FLOW RATE(CFS) =    866.58

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   85.78
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.65
    HALFSTREET FLOOD WIDTH(FEET) =   25.64
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.18
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.03

****************************************************************************
  FLOW PROCESS FROM NODE LR020351.0 TO NODE LR020352.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1680.00  DOWNSTREAM ELEVATION(FEET) = 1655.00
  STREET LENGTH(FEET) =  1091.03   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     873.50
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.45
    HALFSTREET FLOOD WIDTH(FEET) =   65.74
    AVERAGE FLOW VELOCITY(FEET/SEC.) =   10.02
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   14.58
  STREET FLOW TRAVEL TIME(MIN.) =   1.81   Tc(MIN.) =  39.07
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.596
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

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     LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)   CN
RESIDENTIAL
".4 DWELLING/ACRE"         B       15.77      0.75       0.90     56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        0.71      0.75       0.60     56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.89
UNIT-HYDROGRAPH DATA:
RAINFALL(INCH): 5M= 0.46;30M= 0.94;1H= 1.24;3H= 2.02;6H= 2.75;24H= 6.77
S-GRAPH: VALLEY(DEV.)= 62.0%;VALLEY(UNDEV.)/DESERT= 38.0%
         MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
Tc(HR) = 0.65; LAG(HR) = 0.52; Fm(INCH/HR) = 0.56; Ybar = 0.53
USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
3HR = 0.99; 6HR = 1.00; 24HR= 1.00
UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    843.85
LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20352.00 = 15145.87 FEET.
 EQUIVALENT BASIN FACTOR APPROXIMATIONS:
 Lca/L=0.3,n=.0463; Lca/L=0.4,n=.0415; Lca/L=0.5,n=.0382;Lca/L=0.6,n=.0356
TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     239.21
UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    852.16
TOTAL AREA(ACRES) =    843.85        PEAK FLOW RATE(CFS) =     866.58
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.45   HALFSTREET FLOOD WIDTH(FEET) =  65.50
FLOW VELOCITY(FEET/SEC.) = 10.01   DEPTH*VELOCITY(FT*FT/SEC.) =  14.52

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.87
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  81.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  22.60
PIPE-FLOW(CFS) =    809.38
PIPEFLOW TRAVEL TIME(MIN.) =   0.80    Tc(MIN.) =  38.06
UNIT-HYDROGRAPH DATA:
RAINFALL(INCH): 5M= 0.46;30M= 0.94;1H= 1.24;3H= 2.02;6H= 2.75;24H= 6.77
S-GRAPH: VALLEY(DEV.)= 62.0%;VALLEY(UNDEV.)/DESERT= 38.0%
         MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
Tc(HR) = 0.62; LAG(HR) = 0.50; Fm(INCH/HR) = 0.56; Ybar = 0.53
USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
3HR = 0.99; 6HR = 1.00; 24HR= 1.00
UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    843.85
LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20352.00 = 16236.90 FEET.
 EQUIVALENT BASIN FACTOR APPROXIMATIONS:
 Lca/L=0.3,n=.0414; Lca/L=0.4,n=.0371; Lca/L=0.5,n=.0341;Lca/L=0.6,n=.0318
TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     239.21
TOTAL AREA(ACRES) =    843.85        PEAK FLOW RATE(CFS) =    866.58
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
```



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  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   57.20
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.59
    HALFSTREET FLOOD WIDTH(FEET) =   22.59
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.23
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.09

****************************************************************************
  FLOW PROCESS FROM NODE LR020352.0 TO NODE LR020352.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020274.0 TO NODE LR020274.0 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20274.dna
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2577.37    Tc(MIN.) =  38.40
  AREA-AVERAGED Fm(INCH/HR) =  0.59    Ybar = 0.55
  TOTAL AREA(ACRES) =    3101.93
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20274.00 = 19473.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020274.0 TO NODE LR020274.0 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2577.37    Tc(MIN.) =  38.40
  AREA-AVERAGED Fm(INCH/HR) =  0.59    Ybar = 0.55
  TOTAL AREA(ACRES) =    3101.93
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20274.00 = 19473.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020274.0 TO NODE LR020274.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020274.0 TO NODE LR020352.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1670.00  DOWNSTREAM(FEET) =   1655.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   623.43   CHANNEL SLOPE =  0.0241
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   2577.37
  FLOW VELOCITY(FEET/SEC.) =  30.64   FLOW DEPTH(FEET) =   4.45
  TRAVEL TIME(MIN.) =   0.34   Tc(MIN.) =  38.74
```

```
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20352.00 = 20097.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020352.0 TO NODE LR020352.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  38.74
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.604
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  SCHOOL                     B       10.49      0.75      0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.59      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       21.45      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.79
  SUBAREA AREA(ACRES) =   33.53
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.91;1H= 1.21;3H= 2.05;6H= 2.86;24H= 7.03
  S-GRAPH: VALLEY(DEV.)= 35.0%;VALLEY(UNDEV.)/DESERT= 65.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.65; LAG(HR) = 0.52; Fm(INCH/HR) = 0.59; Ybar = 0.55
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.86; 30M = 0.86; 1HR = 0.86;
  3HR = 0.98; 6HR = 0.99; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   3135.46
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20352.00 = 20097.32 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0383; Lca/L=0.4,n=.0343; Lca/L=0.5,n=.0315;Lca/L=0.6,n=.0294
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     875.55
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   2581.17
  TOTAL AREA(ACRES) =   3135.46       PEAK FLOW RATE(CFS) =    2581.17

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020352.0 TO NODE LR020352.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     2581.17    Tc(MIN.) =  38.74
  AREA-AVERAGED Fm(INCH/HR) =  0.59    Ybar = 0.55
  TOTAL AREA(ACRES) =    3135.46
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20352.00 = 20097.32 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =      866.58    Tc(MIN.) =  38.06
  AREA-AVERAGED Fm(INCH/HR) =  0.56    Ybar = 0.53
  TOTAL AREA(ACRES) =     843.85
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20352.00 = 16236.90 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
```



```
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.92;1H= 1.22;3H= 2.04;6H= 2.84;24H= 6.97
  S-GRAPH: VALLEY(DEV.)= 40.8%;VALLEY(UNDEV.)/DESERT= 59.2%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.65; LAG(HR) = 0.52; Fm(INCH/HR) = 0.59; Ybar = 0.54
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.82; 30M = 0.82; 1HR = 0.82;
  3HR = 0.97; 6HR = 0.99; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   3979.31
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20352.00 = 20097.32 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0383; Lca/L=0.4,n=.0343; Lca/L=0.5,n=.0315;Lca/L=0.6,n=.0294
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =    1103.88
  PEAK FLOW RATE(CFS) =    3161.98

****************************************************************************
  FLOW PROCESS FROM NODE LR020352.0 TO NODE LR020352.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020352.0 TO NODE LR020353.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1655.00  DOWNSTREAM(FEET) =   1625.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1454.79   CHANNEL SLOPE =  0.0206
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   6.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   3161.98
  FLOW VELOCITY(FEET/SEC.) =  30.32   FLOW DEPTH(FEET) =   4.82
  TRAVEL TIME(MIN.) =   0.80   Tc(MIN.) =  39.54
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20353.00 = 21552.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020353.0 TO NODE LR020353.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  39.54
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.585
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  SCHOOL                     B       20.64      0.75      0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.09      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       25.75      0.75      0.90    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.69      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.78
  SUBAREA AREA(ACRES) =   50.17
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.92;1H= 1.22;3H= 2.04;6H= 2.83;24H= 6.97
```

```
  S-GRAPH: VALLEY(DEV.)= 40.8%;VALLEY(UNDEV.)/DESERT= 59.2%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.66; LAG(HR) = 0.53; Fm(INCH/HR) = 0.59; Ybar = 0.54
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.82; 30M = 0.82; 1HR = 0.82;
  3HR = 0.97; 6HR = 0.99; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   4029.48
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20353.00 = 21552.11 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0367; Lca/L=0.4,n=.0329; Lca/L=0.5,n=.0302;Lca/L=0.6,n=.0282
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =    1116.30
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   3135.23
  TOTAL AREA(ACRES) =   4029.48       PEAK FLOW RATE(CFS) =    3161.98
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020353.0 TO NODE LR020376.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1625.00  DOWNSTREAM(FEET) =   1600.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1369.05   CHANNEL SLOPE =  0.0183
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   6.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   3161.98
  FLOW VELOCITY(FEET/SEC.) =  28.99   FLOW DEPTH(FEET) =   4.97
  TRAVEL TIME(MIN.) =   0.79   Tc(MIN.) =  40.32
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20376.00 = 22921.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020376.0 TO NODE LR020376.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  40.32
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.566
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B       13.67      0.75      0.25    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       19.97      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        5.87      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.52
  SUBAREA AREA(ACRES) =   39.51
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.92;1H= 1.22;3H= 2.04;6H= 2.83;24H= 6.96
  S-GRAPH: VALLEY(DEV.)= 41.2%;VALLEY(UNDEV.)/DESERT= 58.8%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.67; LAG(HR) = 0.54; Fm(INCH/HR) = 0.58; Ybar = 0.54
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.82; 30M = 0.82; 1HR = 0.82;
```



```
  3HR = 0.97; 6HR = 0.99; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   4068.99
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20376.00 = 22921.16 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0354; Lca/L=0.4,n=.0318; Lca/L=0.5,n=.0292;Lca/L=0.6,n=.0272
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =    1129.50
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   3157.10
  TOTAL AREA(ACRES) =   4068.99       PEAK FLOW RATE(CFS) =    3161.98
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020376.0 TO NODE LR020376.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =    3161.98    Tc(MIN.) =  40.32
  AREA-AVERAGED Fm(INCH/HR) =  0.58   Ybar = 0.54
  TOTAL AREA(ACRES) =    4068.99

****************************************************************************
  FLOW PROCESS FROM NODE LR020360.0 TO NODE LR020361.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   985.35
  ELEVATION DATA: UPSTREAM(FEET) =   2220.00  DOWNSTREAM(FEET) =   2160.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.078
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.229
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.63      0.75      0.70    56   12.08
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA RUNOFF(CFS) =     16.14
  TOTAL AREA(ACRES) =      6.63   PEAK FLOW RATE(CFS) =     16.14

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020361.0 TO NODE LR020362.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2160.00  DOWNSTREAM(FEET) =   2130.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   511.55   CHANNEL SLOPE =  0.0586
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
```

```
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     16.14
  FLOW VELOCITY(FEET/SEC.) =   2.55   FLOW DEPTH(FEET) =   0.36
  TRAVEL TIME(MIN.) =   3.34   Tc(MIN.) =  15.42
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20362.00 =  1496.90 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020362.0 TO NODE LR020362.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  15.42
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.788
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.52      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.40      0.75      0.60    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.20      0.61      1.00    66
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        3.04      0.75      0.40    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.70
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   12.16      SUBAREA RUNOFF(CFS) =   25.17
  EFFECTIVE AREA(ACRES) =     18.79   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     18.79       PEAK FLOW RATE(CFS) =      38.68

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020362.0 TO NODE LR020363.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2130.00  DOWNSTREAM(FEET) =   2110.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   490.89   CHANNEL SLOPE =  0.0407
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     38.68
  FLOW VELOCITY(FEET/SEC.) =   2.74   FLOW DEPTH(FEET) =   0.53
  TRAVEL TIME(MIN.) =   2.98   Tc(MIN.) =  18.40
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20363.00 =  1987.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020363.0 TO NODE LR020363.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  18.40
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.508
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```



```
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.09      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.13      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    7.52      SUBAREA RUNOFF(CFS) =   13.54
  EFFECTIVE AREA(ACRES) =     26.31   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     26.31       PEAK FLOW RATE(CFS) =      47.48

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020363.0 TO NODE LR020364.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2110.00  DOWNSTREAM(FEET) =   2100.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   560.20   CHANNEL SLOPE =  0.0179
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     47.48
  FLOW VELOCITY(FEET/SEC.) =   2.12   FLOW DEPTH(FEET) =   0.67
  TRAVEL TIME(MIN.) =   4.39   Tc(MIN.) =  22.80
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20364.00 =  2547.99 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020364.0 TO NODE LR020364.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  22.80
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.205
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       10.47      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.47      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =   11.94      SUBAREA RUNOFF(CFS) =   18.17
  EFFECTIVE AREA(ACRES) =     38.25   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     38.25       PEAK FLOW RATE(CFS) =      58.49

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020364.0 TO NODE LR020365.0 IS CODE =  54
```

```
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2100.00  DOWNSTREAM(FEET) =   2090.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   586.56   CHANNEL SLOPE =  0.0170
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     58.49
  FLOW VELOCITY(FEET/SEC.) =   2.20   FLOW DEPTH(FEET) =   0.73
  TRAVEL TIME(MIN.) =   4.45   Tc(MIN.) =  27.25
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20365.00 =  3134.55 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020365.0 TO NODE LR020365.0 IS CODE =  81
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
  MAINLINE Tc(MIN) =  27.25
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.982
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.95      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       11.94      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =   12.89      SUBAREA RUNOFF(CFS) =   16.98
  EFFECTIVE AREA(ACRES) =     51.14   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     51.14       PEAK FLOW RATE(CFS) =      67.76

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020365.0 TO NODE LR020366.0 IS CODE =  54
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2090.00  DOWNSTREAM(FEET) =   2055.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   592.61   CHANNEL SLOPE =  0.0591
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     67.76
  FLOW VELOCITY(FEET/SEC.) =   3.60   FLOW DEPTH(FEET) =   0.61
  TRAVEL TIME(MIN.) =   2.74   Tc(MIN.) =  29.99
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20366.00 =  3727.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020366.0 TO NODE LR020366.0 IS CODE =  81
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
  MAINLINE Tc(MIN) =  29.99
```



```
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.871
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.40      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        7.97      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =    8.37      SUBAREA RUNOFF(CFS) =   10.18
  EFFECTIVE AREA(ACRES) =     59.51   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     59.51       PEAK FLOW RATE(CFS) =      72.84

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020366.0 TO NODE LR020367.0 IS CODE =  54
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2055.00  DOWNSTREAM(FEET) =   2040.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   831.01   CHANNEL SLOPE =  0.0181
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     72.84
  FLOW VELOCITY(FEET/SEC.) =   2.38   FLOW DEPTH(FEET) =   0.78
  TRAVEL TIME(MIN.) =   5.83   Tc(MIN.) =  35.82
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20367.00 =  4558.17 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020367.0 TO NODE LR020367.0 IS CODE =  81
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
  MAINLINE Tc(MIN) =  35.82
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.682
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       40.07      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.44      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =   44.51      SUBAREA RUNOFF(CFS) =   46.69
  EFFECTIVE AREA(ACRES) =    104.02   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =    104.02       PEAK FLOW RATE(CFS) =     109.41

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

****************************************************************************
```

```
  FLOW PROCESS FROM NODE LR020367.0 TO NODE LR020368.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2040.00  DOWNSTREAM(FEET) =   1970.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   949.68   CHANNEL SLOPE =  0.0737
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    109.41
  FLOW VELOCITY(FEET/SEC.) =   4.48   FLOW DEPTH(FEET) =   0.70
  TRAVEL TIME(MIN.) =   3.53   Tc(MIN.) =  39.35
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20368.00 =  5507.85 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020368.0 TO NODE LR020368.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  39.35
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.589
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       15.48      0.75      0.70    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.21      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   15.69      SUBAREA RUNOFF(CFS) =   15.02
  EFFECTIVE AREA(ACRES) =    119.71   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =    119.71       PEAK FLOW RATE(CFS) =     115.79

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020368.0 TO NODE LR020369.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1970.00  DOWNSTREAM(FEET) =   1900.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   892.15   CHANNEL SLOPE =  0.0785
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    115.79
  FLOW VELOCITY(FEET/SEC.) =   4.64   FLOW DEPTH(FEET) =   0.71
  TRAVEL TIME(MIN.) =   3.21   Tc(MIN.) =  42.56
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20369.00 =  6400.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020369.0 TO NODE LR020369.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```



```
  MAINLINE Tc(MIN) =  42.56
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.516
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       29.59      0.75      0.70    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.11      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   29.70      SUBAREA RUNOFF(CFS) =   26.52
  EFFECTIVE AREA(ACRES) =    149.41   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =    149.41       PEAK FLOW RATE(CFS) =     134.45

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.88; 1HR = 1.16; 3HR = 1.97; 6HR = 2.75; 24HR = 6.42

****************************************************************************
  FLOW PROCESS FROM NODE LR020369.0 TO NODE LR020370.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1900.00  DOWNSTREAM(FEET) =   1860.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   949.40   CHANNEL SLOPE =  0.0421
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    134.45
  FLOW VELOCITY(FEET/SEC.) =   3.79   FLOW DEPTH(FEET) =   0.84
  TRAVEL TIME(MIN.) =   4.17   Tc(MIN.) =  46.73
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20370.00 =  7349.40 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020370.0 TO NODE LR020370.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  46.73
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.434
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        9.75      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.37      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        7.31      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.81
  SUBAREA AREA(ACRES) =   17.43      SUBAREA RUNOFF(CFS) =   12.99
  EFFECTIVE AREA(ACRES) =    166.84   AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.71
  TOTAL AREA(ACRES) =    166.84       PEAK FLOW RATE(CFS) =     136.31

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
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```
  5M = 0.46; 30M = 0.94; 1HR = 1.24; 3HR = 2.02; 6HR = 2.75; 24HR = 5.95

****************************************************************************
  FLOW PROCESS FROM NODE LR020370.0 TO NODE LR020371.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1860.00  DOWNSTREAM ELEVATION(FEET) = 1845.00
  STREET LENGTH(FEET) =   771.36   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     138.55
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.79
    HALFSTREET FLOOD WIDTH(FEET) =   32.72
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.26
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.97
  STREET FLOW TRAVEL TIME(MIN.) =   2.06   Tc(MIN.) =  48.78
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.397
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.23      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.24      0.75      0.90    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.18      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    5.65      SUBAREA RUNOFF(CFS) =    4.49
  EFFECTIVE AREA(ACRES) =    172.49    AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.71
  TOTAL AREA(ACRES) =    172.49        PEAK FLOW RATE(CFS) =     136.31
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.79   HALFSTREET FLOOD WIDTH(FEET) =  32.54
  FLOW VELOCITY(FEET/SEC.) =  6.22   DEPTH*VELOCITY(FT*FT/SEC.) =   4.92
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20371.00 =  8120.76 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020371.0 TO NODE LR020372.0 IS CODE =  63
```



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----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1845.00  DOWNSTREAM ELEVATION(FEET) = 1825.00
  STREET LENGTH(FEET) =   580.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.77

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     151.42
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.75
    HALFSTREET FLOOD WIDTH(FEET) =   30.28
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.94
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.92
  STREET FLOW TRAVEL TIME(MIN.) =   1.22   Tc(MIN.) =  50.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.377
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.05      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       36.06      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =   39.11      SUBAREA RUNOFF(CFS) =   30.23
  EFFECTIVE AREA(ACRES) =    211.60    AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =    211.60        PEAK FLOW RATE(CFS) =     162.36

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.44; 30M = 0.90; 1HR = 1.18; 3HR = 1.99; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.76   HALFSTREET FLOOD WIDTH(FEET) =  31.14
  FLOW VELOCITY(FEET/SEC.) =  8.07   DEPTH*VELOCITY(FT*FT/SEC.) =   6.15
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  580.5 FT WITH ELEVATION-DROP =  20.0 FT, IS  106.8 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20372.00
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20372.00 =  8701.26 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020372.0 TO NODE LR020373.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
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UPSTREAM ELEVATION(FEET) = 1825.00  DOWNSTREAM ELEVATION(FEET) = 1770.00
STREET LENGTH(FEET) =  1298.78   CURB HEIGHT(INCHES) =  8.0
STREET HALFWIDTH(FEET) = 26.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.77

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     191.12
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.81
  HALFSTREET FLOOD WIDTH(FEET) =   33.20
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.76
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.10
STREET FLOW TRAVEL TIME(MIN.) =   2.47   Tc(MIN.) =  52.48
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.337
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        6.56      0.75      0.60    56
RESIDENTIAL
".4 DWELLING/ACRE"         B       75.29      0.75      0.90    56
RESIDENTIAL
"2 DWELLINGS/ACRE"         B        9.91      0.75      0.70    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.86
SUBAREA AREA(ACRES) =   91.76      SUBAREA RUNOFF(CFS) =   57.50
EFFECTIVE AREA(ACRES) =    303.36    AREA-AVERAGED Fm(INCH/HR) =  0.56
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.75
TOTAL AREA(ACRES) =    303.36        PEAK FLOW RATE(CFS) =     212.38

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.94; 1HR = 1.24; 3HR = 2.02; 6HR = 2.75; 24HR = 6.09

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.84   HALFSTREET FLOOD WIDTH(FEET) =  34.42
FLOW VELOCITY(FEET/SEC.) =  9.05   DEPTH*VELOCITY(FT*FT/SEC.) =   7.56

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.77
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  14.76
PIPE-FLOW(CFS) =     58.75
PIPEFLOW TRAVEL TIME(MIN.) =   1.47    Tc(MIN.) =  51.47
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.353
SUBAREA AREA(ACRES) =   91.76      SUBAREA RUNOFF(CFS) =   58.79
TOTAL AREA(ACRES) =    303.36        PEAK FLOW RATE(CFS) =    216.64
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  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.94; 1HR = 1.24; 3HR = 2.02; 6HR = 2.75; 24HR = 6.09
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  157.89
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.77
    HALFSTREET FLOOD WIDTH(FEET) =   31.13
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.24
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.34
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  1298.8 FT WITH ELEVATION-DROP =  55.0 FT, IS  194.9 CFS,
         WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  20373.00
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20373.00 = 10000.04 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020373.0 TO NODE LR020374.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1770.00  DOWNSTREAM ELEVATION(FEET) = 1720.00
  STREET LENGTH(FEET) =  1333.48   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.79

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     240.46
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.88
    HALFSTREET FLOOD WIDTH(FEET) =   36.74
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.98
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.92
  STREET FLOW TRAVEL TIME(MIN.) =   2.47   Tc(MIN.) =  53.94
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.315
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        6.64      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       73.46      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.88
  SUBAREA AREA(ACRES) =   80.10      SUBAREA RUNOFF(CFS) =   47.63
  EFFECTIVE AREA(ACRES) =    383.46    AREA-AVERAGED Fm(INCH/HR) =  0.58
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.78
  TOTAL AREA(ACRES) =    383.46        PEAK FLOW RATE(CFS) =     254.01
```

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  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.24

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.90   HALFSTREET FLOOD WIDTH(FEET) =  37.47
  FLOW VELOCITY(FEET/SEC.) =  9.12   DEPTH*VELOCITY(FT*FT/SEC.) =   8.17

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.79
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.88
  PIPE-FLOW(CFS) =     94.41
  PIPEFLOW TRAVEL TIME(MIN.) =   1.40    Tc(MIN.) =  52.87
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.331
  SUBAREA AREA(ACRES) =   80.10      SUBAREA RUNOFF(CFS) =   48.79
  TOTAL AREA(ACRES) =    383.46        PEAK FLOW RATE(CFS) =    259.53

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.24
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  165.12
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.79
    HALFSTREET FLOOD WIDTH(FEET) =   32.23
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.04
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.36
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20374.00 = 11333.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020374.0 TO NODE LR020375.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1720.00  DOWNSTREAM ELEVATION(FEET) = 1660.00
  STREET LENGTH(FEET) =  1282.17   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.75

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     282.62
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.90
    HALFSTREET FLOOD WIDTH(FEET) =   37.47
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    AVERAGE FLOW VELOCITY(FEET/SEC.) =   10.14
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    9.09
  STREET FLOW TRAVEL TIME(MIN.) =   2.11   Tc(MIN.) =  54.98
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.300
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        8.27      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       70.54      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.87
  SUBAREA AREA(ACRES) =   78.81      SUBAREA RUNOFF(CFS) =   46.16
  EFFECTIVE AREA(ACRES) =    462.27    AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =    462.27        PEAK FLOW RATE(CFS) =     295.05

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.45

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.91   HALFSTREET FLOOD WIDTH(FEET) =  38.02
  FLOW VELOCITY(FEET/SEC.) = 10.28   DEPTH*VELOCITY(FT*FT/SEC.) =   9.33

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.75
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.83
  PIPE-FLOW(CFS) =    164.68
  PIPEFLOW TRAVEL TIME(MIN.) =   1.08    Tc(MIN.) =  53.95
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.315
  SUBAREA AREA(ACRES) =   78.81      SUBAREA RUNOFF(CFS) =   47.21
  TOTAL AREA(ACRES) =    462.27        PEAK FLOW RATE(CFS) =    301.22

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.45
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  136.54
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.73
    HALFSTREET FLOOD WIDTH(FEET) =   29.17
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.13
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.93
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  1282.2 FT WITH ELEVATION-DROP =  60.0 FT, IS  170.0 CFS,
         WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  20375.00
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20375.00 = 12615.69 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020375.0 TO NODE LR020376.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
```

```
==============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1660.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1600.00
  FLOW LENGTH(FEET) =  1887.14   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  35.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  25.17
  PIPE-FLOW(CFS) =    301.22
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.33    Tc(MIN.) =  55.28
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.296
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       17.76      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       79.51      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.85
  SUBAREA AREA(ACRES) =   97.27      SUBAREA RUNOFF(CFS) =   58.13
  EFFECTIVE AREA(ACRES) =    559.54    AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =    559.54        PEAK FLOW RATE(CFS) =    351.40

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 26.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.80
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   50.18
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.59
    HALFSTREET FLOOD WIDTH(FEET) =   21.34
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.29
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.09
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  1887.1 FT WITH ELEVATION-DROP =  60.0 FT, IS  176.7 CFS,
         WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  20376.00
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20376.00 = 14502.83 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020376.0 TO NODE LR020376.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
```



```
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  55.28
  RAINFALL INTENSITY(INCH/HR) =   1.30
  AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.80
  EFFECTIVE STREAM AREA(ACRES) =   559.54
  TOTAL STREAM AREA(ACRES) =   559.54
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    351.40
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1      3161.98   40.32     4068.99  LR020120.0
     2       351.40   55.28      559.54  LR020360.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.92;1H= 1.22;3H= 2.04;6H= 2.82;24H= 6.88
  S-GRAPH: VALLEY(DEV.)= 41.6%;VALLEY(UNDEV.)/DESERT= 58.4%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.67; LAG(HR) = 0.54; Fm(INCH/HR) = 0.59; Ybar = 0.55
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.80; 30M = 0.80; 1HR = 0.80;
  3HR = 0.97; 6HR = 0.98; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   4628.53
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20376.00 = 22921.16 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0354; Lca/L=0.4,n=.0318; Lca/L=0.5,n=.0292;Lca/L=0.6,n=.0272
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =    1253.23
  PEAK FLOW RATE(CFS) =   3475.12

****************************************************************************
  FLOW PROCESS FROM NODE LR020376.0 TO NODE LR020376.0 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20376.dna
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =   4628.53  TC(MIN.) =     40.32
  AREA-AVERAGED Fm(INCH/HR)=  0.59   Ybar =  0.55
  PEAK FLOW RATE(CFS)   =   3475.12
============================================================================
============================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

```
**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
        (c) Copyright 1983-2002 Advanced Engineering Software (aes)
            Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                        Analysis prepared by:

                          County of San Bernardino
                        Transportation Flood Control

                          Water Resources Division

--------------------------------------------------------------------------
  FILE NAME: LR0204ZZ.Z13
  TIME/DATE OF STUDY: 07:41 09/15/2004
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.2500

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)     (n)
===  =====  ========  =================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
```



```
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


**************************************************************************
  FLOW PROCESS FROM NODE LR020400.0 TO NODE LR020401.0 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   924.07
  ELEVATION DATA: UPSTREAM(FEET) =   1720.00  DOWNSTREAM(FEET) =   1670.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.338
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.397
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.14      0.75       0.90    56   13.40
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       10.27      0.75       0.60    56   11.34
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     27.59
  TOTAL AREA(ACRES) =     10.41   PEAK FLOW RATE(CFS) =     27.59

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

**************************************************************************
  FLOW PROCESS FROM NODE LR020401.0 TO NODE LR020402.0 IS CODE =  63
--------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
==========================================================================
  UPSTREAM ELEVATION(FEET) = 1670.00  DOWNSTREAM ELEVATION(FEET) = 1657.00
  STREET LENGTH(FEET) =   293.15   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
```

```
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.72

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      38.35
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.49
    HALFSTREET FLOOD WIDTH(FEET) =   18.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.62
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.75
  STREET FLOW TRAVEL TIME(MIN.) =   0.87   Tc(MIN.) =  12.21
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.250
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.06      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        8.48      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    8.54      SUBAREA RUNOFF(CFS) =   21.51
  EFFECTIVE AREA(ACRES) =     18.95    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     18.95        PEAK FLOW RATE(CFS) =      47.73

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.52   HALFSTREET FLOOD WIDTH(FEET) =  18.81
  FLOW VELOCITY(FEET/SEC.) =  6.11   DEPTH*VELOCITY(FT*FT/SEC.) =   3.16
  LONGEST FLOWPATH FROM NODE  20400.00 TO NODE  20402.00 =  1217.22 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020402.0 TO NODE LR020403.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1657.00  DOWNSTREAM ELEVATION(FEET) = 1655.00
  STREET LENGTH(FEET) =   198.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      51.04
```



```
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.64
    HALFSTREET FLOOD WIDTH(FEET) =   25.22
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.80
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.45
  STREET FLOW TRAVEL TIME(MIN.) =   0.87   Tc(MIN.) =  13.08
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.118
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.76      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    2.76      SUBAREA RUNOFF(CFS) =    6.63
  EFFECTIVE AREA(ACRES) =     21.71    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     21.71        PEAK FLOW RATE(CFS) =      52.11

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.65   HALFSTREET FLOOD WIDTH(FEET) =  25.46
  FLOW VELOCITY(FEET/SEC.) =  3.80   DEPTH*VELOCITY(FT*FT/SEC.) =   2.47
  LONGEST FLOWPATH FROM NODE  20400.00 TO NODE  20403.00 =  1415.72 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020403.0 TO NODE LR020404.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1655.00  DOWNSTREAM ELEVATION(FEET) = 1645.00
  STREET LENGTH(FEET) =   470.13   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.89

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      61.52
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.61
    HALFSTREET FLOOD WIDTH(FEET) =   23.51
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.22
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.19
  STREET FLOW TRAVEL TIME(MIN.) =   1.50   Tc(MIN.) =  14.58
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.921
  SUBAREA LOSS RATE DATA(AMC  II):
```

```
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"        B        8.38      0.75       0.60    56
RESIDENTIAL
".4 DWELLING/ACRE"          B        0.08      0.75       0.90    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
SUBAREA AREA(ACRES) =    8.46      SUBAREA RUNOFF(CFS) =   18.81
EFFECTIVE AREA(ACRES) =     30.17    AREA-AVERAGED Fm(INCH/HR) =  0.45
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
TOTAL AREA(ACRES) =     30.17        PEAK FLOW RATE(CFS) =      67.07

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.63   HALFSTREET FLOOD WIDTH(FEET) =  24.30
FLOW VELOCITY(FEET/SEC.) =  5.35   DEPTH*VELOCITY(FT*FT/SEC.) =   3.35
LONGEST FLOWPATH FROM NODE  20400.00 TO NODE  20404.00 =  1885.85 FEET.

****************************************************************************
FLOW PROCESS FROM NODE LR020404.0 TO NODE LR020405.0 IS CODE =  63
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 1645.00  DOWNSTREAM ELEVATION(FEET) = 1635.00
STREET LENGTH(FEET) =   344.26   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.81

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      77.57
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.62
  HALFSTREET FLOOD WIDTH(FEET) =   24.18
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.24
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.89
STREET FLOW TRAVEL TIME(MIN.) =   0.92   Tc(MIN.) =  15.50
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.816
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"        B        9.77      0.75       0.60    56
RESIDENTIAL
".4 DWELLING/ACRE"          B        0.09      0.75       0.90    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
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SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
SUBAREA AREA(ACRES) =    9.86      SUBAREA RUNOFF(CFS) =   20.99
EFFECTIVE AREA(ACRES) =     40.03    AREA-AVERAGED Fm(INCH/HR) =  0.45
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
TOTAL AREA(ACRES) =     40.03        PEAK FLOW RATE(CFS) =      85.21

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.56

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.64   HALFSTREET FLOOD WIDTH(FEET) =  25.09
FLOW VELOCITY(FEET/SEC.) =  6.39   DEPTH*VELOCITY(FT*FT/SEC.) =   4.10
LONGEST FLOWPATH FROM NODE  20400.00 TO NODE  20405.00 =  2230.11 FEET.

****************************************************************************
FLOW PROCESS FROM NODE LR020405.0 TO NODE LR020406.0 IS CODE =  63
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 1635.00  DOWNSTREAM ELEVATION(FEET) = 1620.00
STREET LENGTH(FEET) =   701.02   CURB HEIGHT(INCHES) =  8.0
STREET HALFWIDTH(FEET) = 26.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.91

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     104.71
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.75
  HALFSTREET FLOOD WIDTH(FEET) =   30.39
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.74
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.33
STREET FLOW TRAVEL TIME(MIN.) =   2.04   Tc(MIN.) =  17.54
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.615
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"        B       20.00      0.75       0.60    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
SUBAREA AREA(ACRES) =   20.00      SUBAREA RUNOFF(CFS) =   38.99
EFFECTIVE AREA(ACRES) =     60.03    AREA-AVERAGED Fm(INCH/HR) =  0.45
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
TOTAL AREA(ACRES) =     60.03        PEAK FLOW RATE(CFS) =     116.95

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
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  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.78   HALFSTREET FLOOD WIDTH(FEET) =  31.55
  FLOW VELOCITY(FEET/SEC.) =  5.94   DEPTH*VELOCITY(FT*FT/SEC.) =   4.62
  LONGEST FLOWPATH FROM NODE  20400.00 TO NODE  20406.00 =  2931.13 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020406.0 TO NODE LR020407.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1620.00  DOWNSTREAM ELEVATION(FEET) = 1612.00
  STREET LENGTH(FEET) =   570.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.02

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     121.77
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.84
    HALFSTREET FLOOD WIDTH(FEET) =   34.42
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.19
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.33
  STREET FLOW TRAVEL TIME(MIN.) =   1.83   Tc(MIN.) =  19.37
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.464
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.31      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    5.31      SUBAREA RUNOFF(CFS) =    9.63
  EFFECTIVE AREA(ACRES) =     65.34    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     65.34        PEAK FLOW RATE(CFS) =     118.41

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.83   HALFSTREET FLOOD WIDTH(FEET) =  34.06
  FLOW VELOCITY(FEET/SEC.) =  5.15   DEPTH*VELOCITY(FT*FT/SEC.) =   4.27
  LONGEST FLOWPATH FROM NODE  20400.00 TO NODE  20407.00 =  3501.13 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020407.0 TO NODE LR020408.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
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  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1612.00  DOWNSTREAM ELEVATION(FEET) = 1590.00
  STREET LENGTH(FEET) =   804.76   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.85

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     137.75
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.79
    HALFSTREET FLOOD WIDTH(FEET) =   31.98
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.81
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.35
  STREET FLOW TRAVEL TIME(MIN.) =   1.97   Tc(MIN.) =  21.34
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.324
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       22.89      0.75      0.60    56
  COMMERCIAL                 B        0.02      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   22.91      SUBAREA RUNOFF(CFS) =   38.68
  EFFECTIVE AREA(ACRES) =     88.25    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     88.25        PEAK FLOW RATE(CFS) =     148.91

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.80   HALFSTREET FLOOD WIDTH(FEET) =  32.84
  FLOW VELOCITY(FEET/SEC.) =  6.98   DEPTH*VELOCITY(FT*FT/SEC.) =   5.61
  LONGEST FLOWPATH FROM NODE  20400.00 TO NODE  20408.00 =  4305.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020408.0 TO NODE LR020409.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1590.00  DOWNSTREAM ELEVATION(FEET) = 1570.00
  STREET LENGTH(FEET) =   498.42   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
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OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.78

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     195.24
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.82
  HALFSTREET FLOOD WIDTH(FEET) =   33.75
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.65
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.11
STREET FLOW TRAVEL TIME(MIN.) =   0.96   Tc(MIN.) =  22.30
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.264
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B       51.42      0.75      0.60    56
COMMERCIAL                 B        4.09      0.75      0.10    56
RESIDENTIAL
".4 DWELLING/ACRE"         B        0.43      0.75      0.90    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.57
SUBAREA AREA(ACRES) =   55.94      SUBAREA RUNOFF(CFS) =   92.67
EFFECTIVE AREA(ACRES) =    144.19    AREA-AVERAGED Fm(INCH/HR) =  0.44
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.59
TOTAL AREA(ACRES) =    144.19        PEAK FLOW RATE(CFS) =     236.77

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.73

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.87   HALFSTREET FLOOD WIDTH(FEET) =  36.13
FLOW VELOCITY(FEET/SEC.) =  9.15   DEPTH*VELOCITY(FT*FT/SEC.) =   7.95

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.78
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  16.43
PIPE-FLOW(CFS) =     97.67
PIPEFLOW TRAVEL TIME(MIN.) =   0.51    Tc(MIN.) =  21.84
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.292
SUBAREA AREA(ACRES) =   55.94      SUBAREA RUNOFF(CFS) =   94.09
TOTAL AREA(ACRES) =    144.19        PEAK FLOW RATE(CFS) =    240.42

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.73
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  142.75
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
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  STREET FLOW DEPTH(FEET) =  0.75
  HALFSTREET FLOOD WIDTH(FEET) =   30.39
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.82
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.90
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
       AND L =   498.4 FT WITH ELEVATION-DROP =  20.0 FT, IS  208.3 CFS,
       WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  20409.00
LONGEST FLOWPATH FROM NODE  20400.00 TO NODE  20409.00 =  4804.31 FEET.

****************************************************************************
FLOW PROCESS FROM NODE LR020409.0 TO NODE LR020410.0 IS CODE =  63
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 1570.00  DOWNSTREAM ELEVATION(FEET) = 1533.00
STREET LENGTH(FEET) =  1374.92   CURB HEIGHT(INCHES) =  8.0
STREET HALFWIDTH(FEET) = 26.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.86

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     280.22
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.97
  HALFSTREET FLOOD WIDTH(FEET) =   41.26
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.29
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    8.05
STREET FLOW TRAVEL TIME(MIN.) =   2.77   Tc(MIN.) =  24.61
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.134
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"OPEN BRUSH"               B        0.01      0.61      1.00    66
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B       52.45      0.75      0.60    56
PUBLIC PARK                B        0.03      0.75      0.85    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
SUBAREA AREA(ACRES) =   52.49      SUBAREA RUNOFF(CFS) =   79.59
EFFECTIVE AREA(ACRES) =    196.68    AREA-AVERAGED Fm(INCH/HR) =  0.44
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.59
TOTAL AREA(ACRES) =    196.68        PEAK FLOW RATE(CFS) =     299.48

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.73

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.99   HALFSTREET FLOOD WIDTH(FEET) =  42.30
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  FLOW VELOCITY(FEET/SEC.) =  8.42   DEPTH*VELOCITY(FT*FT/SEC.) =   8.36

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.86
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.80
  PIPE-FLOW(CS) =    152.17
  PIPEFLOW TRAVEL TIME(MIN.) =   1.45    Tc(MIN.) =  23.29
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.205
  SUBAREA AREA(ACRES) =   52.49      SUBAREA RUNOFF(CFS) =   82.97
  TOTAL AREA(ACRES) =    196.68        PEAK FLOW RATE(CFS) =    312.14

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.73
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  159.97
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.82
    HALFSTREET FLOOD WIDTH(FEET) =   33.75
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.09
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.83
  LONGEST FLOWPATH FROM NODE  20400.00 TO NODE  20410.00 =  6179.23 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020410.0 TO NODE LR020410.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020376.0 TO NODE LR020376.0 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20376.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     3475.12    Tc(MIN.) =  40.32
  AREA-AVERAGED Fm(INCH/HR) =  0.59    Ybar = 0.55
  TOTAL AREA(ACRES) =    4628.53
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20376.00 = 22921.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020376.0 TO NODE LR020376.0 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     3475.12    Tc(MIN.) =  40.32
  AREA-AVERAGED Fm(INCH/HR) =  0.59    Ybar = 0.55
  TOTAL AREA(ACRES) =    4628.53
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20376.00 = 22921.16 FEET.

****************************************************************************
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  FLOW PROCESS FROM NODE LR020376.0 TO NODE LR020376.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020376.0 TO NODE LR020410.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1600.00  DOWNSTREAM(FEET) =   1533.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2846.26   CHANNEL SLOPE =  0.0235
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   6.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   3475.12
  FLOW VELOCITY(FEET/SEC.) =  32.65   FLOW DEPTH(FEET) =   4.89
  TRAVEL TIME(MIN.) =   1.45   Tc(MIN.) =  41.78
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20410.00 = 25767.42 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020410.0 TO NODE LR020410.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  41.78
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.553
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       25.52      0.75       0.60    56
  PUBLIC PARK                B        5.30      0.75       0.85    56
  SCHOOL                     B        8.19      0.75       0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
  SUBAREA AREA(ACRES) =   39.01
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.92;1H= 1.22;3H= 2.04;6H= 2.82;24H= 6.87
  S-GRAPH: VALLEY(DEV.)= 42.1%;VALLEY(UNDEV.)/DESERT= 57.9%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.70; LAG(HR) = 0.56; Fm(INCH/HR) = 0.58; Ybar = 0.55
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.80; 30M = 0.80; 1HR = 0.80;
  3HR = 0.97; 6HR = 0.98; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   4667.54
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20410.00 = 25767.42 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0331; Lca/L=0.4,n=.0297; Lca/L=0.5,n=.0273;Lca/L=0.6,n=.0254
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =    1263.57
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   3442.35
  TOTAL AREA(ACRES) =   4667.54       PEAK FLOW RATE(CFS) =    3475.12
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.00

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  FLOW PROCESS FROM NODE LR020410.0 TO NODE LR020410.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     3475.12    Tc(MIN.) =  41.78
  AREA-AVERAGED Fm(INCH/HR) =  0.58    Ybar = 0.55
  TOTAL AREA(ACRES) =    4667.54
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20410.00 = 25767.42 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    312.14  23.29    2.205  0.75( 0.44) 0.59   196.7 LR020400.0
  LONGEST FLOWPATH FROM NODE  20400.00 TO NODE  20410.00 =  6179.23 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.92;1H= 1.22;3H= 2.04;6H= 2.82;24H= 6.82
  S-GRAPH: VALLEY(DEV.)= 44.4%;VALLEY(UNDEV.)/DESERT= 55.6%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.70; LAG(HR) = 0.56; Fm(INCH/HR) = 0.58; Ybar = 0.54
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.79; 30M = 0.79; 1HR = 0.79;
  3HR = 0.97; 6HR = 0.98; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   4864.22
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20410.00 = 25767.42 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0331; Lca/L=0.4,n=.0297; Lca/L=0.5,n=.0273;Lca/L=0.6,n=.0254
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =    1314.42
  PEAK FLOW RATE(CFS) =    3592.21

****************************************************************************
  FLOW PROCESS FROM NODE LR020410.0 TO NODE LR020410.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020410.0 TO NODE LR020452.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1533.00  DOWNSTREAM(FEET) =   1510.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1329.02   CHANNEL SLOPE =  0.0173
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   6.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   3592.21
  FLOW VELOCITY(FEET/SEC.) =  29.43   FLOW DEPTH(FEET) =   5.37
  TRAVEL TIME(MIN.) =   0.75   Tc(MIN.) =  42.53
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20452.00 = 27096.44 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020452.0 TO NODE LR020452.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
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============================================================================
  MAINLINE Tc(MIN) =  42.53
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.537
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       25.77      0.75       0.60    56
  PUBLIC PARK                B        1.54      0.75       0.85    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.79      0.61       1.00    66
  COMMERCIAL                 B        0.05      0.75       0.10    56
  MOBILE HOME PARK           B        5.02      0.75       0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.57
  SUBAREA AREA(ACRES) =   33.17
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.92;1H= 1.22;3H= 2.04;6H= 2.82;24H= 6.82
  S-GRAPH: VALLEY(DEV.)= 44.8%;VALLEY(UNDEV.)/DESERT= 55.2%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.71; LAG(HR) = 0.57; Fm(INCH/HR) = 0.58; Ybar = 0.54
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.79; 30M = 0.79; 1HR = 0.79;
  3HR = 0.97; 6HR = 0.98; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   4897.39
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20452.00 = 27096.44 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0322; Lca/L=0.4,n=.0289; Lca/L=0.5,n=.0265;Lca/L=0.6,n=.0248
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =    1323.07
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   3570.87
  TOTAL AREA(ACRES) =   4897.39       PEAK FLOW RATE(CFS) =    3592.21
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020452.0 TO NODE LR020452.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020420.0 TO NODE LR020421.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   575.26
  ELEVATION DATA: UPSTREAM(FEET) =   1740.00  DOWNSTREAM(FEET) =   1735.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.027
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.454
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
```

```
  "3-4 DWELLINGS/ACRE"       A        0.69      0.98      0.60    32   13.52
  MOBILE HOME PARK           A        4.22      0.98      0.25    32   11.03
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.30
  SUBAREA RUNOFF(CFS) =     13.97
  TOTAL AREA(ACRES) =      4.91   PEAK FLOW RATE(CFS) =     13.97

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020421.0 TO NODE LR020422.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1735.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1725.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   643.67
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.060
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A        2.50      0.98      0.25    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.99      0.98      0.60    32
  COMMERCIAL                 A        2.87      0.98      0.10    32
  COMMERCIAL                 B        1.82      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.05      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.87
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.29
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     26.87
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.35
  AVERAGE FLOW DEPTH(FEET) =   0.63   FLOOD WIDTH(FEET) =   36.08
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   2.46   Tc(MIN.) =  13.49
  SUBAREA AREA(ACRES) =   10.23       SUBAREA RUNOFF(CFS) =   25.90
  EFFECTIVE AREA(ACRES) =   15.14     AREA-AVERAGED Fm(INCH/HR) =   0.26
  AREA-AVERAGED Fp(INCH/HR) =   0.90  AREA-AVERAGED Ap =   0.29
  TOTAL AREA(ACRES) =     15.14         PEAK FLOW RATE(CFS) =      38.14

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.68   FLOOD WIDTH(FEET) =   42.36
  FLOW VELOCITY(FEET/SEC.) =   4.62   DEPTH*VELOCITY(FT*FT/SEC) =   3.16
  LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20422.00 =  1218.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020422.0 TO NODE LR020423.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
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```
  UPSTREAM ELEVATION(FEET) = 1725.00  DOWNSTREAM ELEVATION(FEET) = 1712.00
  STREET LENGTH(FEET) =   299.17   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.80

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      47.48
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.55
    HALFSTREET FLOOD WIDTH(FEET) =   19.62
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.88
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.24
  STREET FLOW TRAVEL TIME(MIN.) =   0.85   Tc(MIN.) =  14.34
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.950
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A        2.62      0.98      0.25    32
  SCHOOL                     A        0.15      0.98      0.60    32
  COMMERCIAL                 A        1.21      0.98      0.10    32
  COMMERCIAL                 B        2.01      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.63      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.84
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.27
  SUBAREA AREA(ACRES) =    7.62      SUBAREA RUNOFF(CFS) =   18.68
  EFFECTIVE AREA(ACRES) =     22.76    AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.88  AREA-AVERAGED Ap =  0.28
  TOTAL AREA(ACRES) =     22.76        PEAK FLOW RATE(CFS) =      55.32

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.58   HALFSTREET FLOOD WIDTH(FEET) =  20.87
  FLOW VELOCITY(FEET/SEC.) =  6.09   DEPTH*VELOCITY(FT*FT/SEC.) =   3.50
  LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20423.00 =  1518.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020423.0 TO NODE LR020424.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1712.00  DOWNSTREAM ELEVATION(FEET) = 1703.00
  STREET LENGTH(FEET) =   258.55   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
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 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      61.67
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.61
   HALFSTREET FLOOD WIDTH(FEET) =   22.74
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.75
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.53
 STREET FLOW TRAVEL TIME(MIN.) =   0.75   Tc(MIN.) =  15.09
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.862
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 MOBILE HOME PARK           A        0.47      0.98      0.25    32
 MOBILE HOME PARK           B        0.58      0.75      0.25    56
 COMMERCIAL                 B        2.83      0.75      0.10    56
 COMMERCIAL                 A        0.03      0.98      0.10    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.39      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.77
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.26
 SUBAREA AREA(ACRES) =    5.30      SUBAREA RUNOFF(CFS) =   12.69
 EFFECTIVE AREA(ACRES) =     28.06    AREA-AVERAGED Fm(INCH/HR) =  0.24
 AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  0.28
 TOTAL AREA(ACRES) =     28.06        PEAK FLOW RATE(CFS) =      66.20

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.63   HALFSTREET FLOOD WIDTH(FEET) =  23.37
 FLOW VELOCITY(FEET/SEC.) =  5.86   DEPTH*VELOCITY(FT*FT/SEC.) =   3.67
 LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20424.00 =  1776.65 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020424.0 TO NODE LR020425.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1703.00  DOWNSTREAM ELEVATION(FEET) = 1696.00
 STREET LENGTH(FEET) =   197.56   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 32.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
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 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      69.99
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.63
   HALFSTREET FLOOD WIDTH(FEET) =   23.76
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.00
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.80
 STREET FLOW TRAVEL TIME(MIN.) =   0.55   Tc(MIN.) =  15.64
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.801
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 MOBILE HOME PARK           B        0.06      0.75      0.25    56
 COMMERCIAL                 B        1.63      0.75      0.10    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.63      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.35
 SUBAREA AREA(ACRES) =    3.32      SUBAREA RUNOFF(CFS) =    7.59
 EFFECTIVE AREA(ACRES) =     31.38    AREA-AVERAGED Fm(INCH/HR) =  0.24
 AREA-AVERAGED Fp(INCH/HR) =  0.85  AREA-AVERAGED Ap =  0.29
 TOTAL AREA(ACRES) =     31.38        PEAK FLOW RATE(CFS) =      72.26

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.64   HALFSTREET FLOOD WIDTH(FEET) =  24.07
 FLOW VELOCITY(FEET/SEC.) =  6.04   DEPTH*VELOCITY(FT*FT/SEC.) =   3.86
 LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20425.00 =  1974.21 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020425.0 TO NODE LR020426.0 IS CODE =  92
----------------------------------------------------------------------------
 >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =   1696.00
 DOWNSTREAM NODE ELEVATION(FEET) =   1685.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   834.27
 "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
 PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
 PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
 MAXIMUM DEPTH(FEET) =   1.00
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.539
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.17      0.75      0.60    56
 MOBILE HOME PARK           B        0.01      0.75      0.25    56
 COMMERCIAL                 B        0.54      0.75      0.10    56
 COMMERCIAL                 A        3.24      0.98      0.10    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        4.60      0.98      0.60    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.93
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     81.56
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  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.00
  AVERAGE FLOW DEPTH(FEET) =   0.84   FLOOD WIDTH(FEET) =   60.73
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   2.78   Tc(MIN.) =  18.42
  SUBAREA AREA(ACRES) =    9.56       SUBAREA RUNOFF(CFS) =   18.63
  EFFECTIVE AREA(ACRES) =   40.94     AREA-AVERAGED Fm(INCH/HR) =   0.27
  AREA-AVERAGED Fp(INCH/HR) =   0.87  AREA-AVERAGED Ap =   0.31
  TOTAL AREA(ACRES) =     40.94         PEAK FLOW RATE(CFS) =      83.49

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.85   FLOOD WIDTH(FEET) =   61.32
  FLOW VELOCITY(FEET/SEC.) =   5.02   DEPTH*VELOCITY(FT*FT/SEC) =   4.25
  LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20426.00 =  2808.48 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020426.0 TO NODE LR020427.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1685.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1676.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   311.63
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.479
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 A        1.60      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        6.06      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.60      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.96
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     90.92
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.98
  AVERAGE FLOW DEPTH(FEET) =   0.78   FLOOD WIDTH(FEET) =   54.01
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.74   Tc(MIN.) =  19.16
  SUBAREA AREA(ACRES) =    8.26       SUBAREA RUNOFF(CFS) =   14.86
  EFFECTIVE AREA(ACRES) =   49.20     AREA-AVERAGED Fm(INCH/HR) =   0.31
  AREA-AVERAGED Fp(INCH/HR) =   0.89  AREA-AVERAGED Ap =   0.34
  TOTAL AREA(ACRES) =     49.20         PEAK FLOW RATE(CFS) =      96.15

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.79   FLOOD WIDTH(FEET) =   55.20
  FLOW VELOCITY(FEET/SEC.) =   7.08   DEPTH*VELOCITY(FT*FT/SEC) =   5.62
  LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20427.00 =  3120.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020427.0 TO NODE LR020428.0 IS CODE =  92
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----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1676.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1668.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   300.94
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.425
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        5.53      0.98      0.60    32
  COMMERCIAL                 A        0.78      0.98      0.10    32
  MOBILE HOME PARK           A        2.12      0.98      0.25    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.52      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.96
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.47
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    104.09
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.96
  AVERAGE FLOW DEPTH(FEET) =   0.82   FLOOD WIDTH(FEET) =   58.04
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.72   Tc(MIN.) =  19.88
  SUBAREA AREA(ACRES) =    8.95       SUBAREA RUNOFF(CFS) =   15.88
  EFFECTIVE AREA(ACRES) =   58.15     AREA-AVERAGED Fm(INCH/HR) =   0.33
  AREA-AVERAGED Fp(INCH/HR) =   0.91  AREA-AVERAGED Ap =   0.36
  TOTAL AREA(ACRES) =     58.15         PEAK FLOW RATE(CFS) =     109.62

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.83   FLOOD WIDTH(FEET) =   59.38
  FLOW VELOCITY(FEET/SEC.) =   7.02   DEPTH*VELOCITY(FT*FT/SEC) =   5.82
  LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20428.00 =  3421.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020428.0 TO NODE LR020429.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1668.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1664.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   362.52
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.343
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 A        0.97      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       13.68      0.98      0.60    32
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  MOBILE HOME PARK           A        3.07      0.98      0.25    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.25      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.96
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.52
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    125.38
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.14
  AVERAGE FLOW DEPTH(FEET) =   0.96   FLOOD WIDTH(FEET) =   74.77
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   1.18   Tc(MIN.) =  21.06
  SUBAREA AREA(ACRES) =   18.97       SUBAREA RUNOFF(CFS) =   31.53
  EFFECTIVE AREA(ACRES) =   77.12     AREA-AVERAGED Fm(INCH/HR) =   0.37
  AREA-AVERAGED Fp(INCH/HR) =   0.92  AREA-AVERAGED Ap =   0.40
  TOTAL AREA(ACRES) =     77.12         PEAK FLOW RATE(CFS) =     136.85

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.98   FLOOD WIDTH(FEET) =   77.45
  FLOW VELOCITY(FEET/SEC.) =   5.24   DEPTH*VELOCITY(FT*FT/SEC) =   5.15
  LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20429.00 =  3783.57 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020429.0 TO NODE LR020430.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1664.00  DOWNSTREAM ELEVATION(FEET) = 1628.00
  STREET LENGTH(FEET) =  1363.05   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.83

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     172.20
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.81
    HALFSTREET FLOOD WIDTH(FEET) =   33.58
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.40
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.00
  STREET FLOW TRAVEL TIME(MIN.) =   3.07   Tc(MIN.) =  24.13
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.159
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       21.36      0.98      0.60    32
  COMMERCIAL                 A        7.94      0.98      0.10    32
  MOBILE HOME PARK           A       14.89      0.98      0.25    32
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  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.39
  SUBAREA AREA(ACRES) =   44.19      SUBAREA RUNOFF(CFS) =   70.66
  EFFECTIVE AREA(ACRES) =    121.31    AREA-AVERAGED Fm(INCH/HR) =  0.38
  AREA-AVERAGED Fp(INCH/HR) =  0.94  AREA-AVERAGED Ap =  0.40
  TOTAL AREA(ACRES) =    121.31        PEAK FLOW RATE(CFS) =     194.76

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.85   HALFSTREET FLOOD WIDTH(FEET) =  35.29
  FLOW VELOCITY(FEET/SEC.) =  7.60   DEPTH*VELOCITY(FT*FT/SEC.) =   6.43

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.83
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.78
  PIPE-FLOW(CFS) =     33.89
  PIPEFLOW TRAVEL TIME(MIN.) =   2.11    Tc(MIN.) =  23.17
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.213
  SUBAREA AREA(ACRES) =   44.19      SUBAREA RUNOFF(CFS) =   72.79
  TOTAL AREA(ACRES) =    121.31        PEAK FLOW RATE(CFS) =    200.59

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  166.70
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.80
    HALFSTREET FLOOD WIDTH(FEET) =   33.15
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.34
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.89
  LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20430.00 =  5146.62 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020430.0 TO NODE LR020449.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1628.00  DOWNSTREAM ELEVATION(FEET) = 1625.00
  STREET LENGTH(FEET) =  1350.21   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90
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  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     209.04
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  1.32
  HALFSTREET FLOOD WIDTH(FEET) =   59.21
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.95
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.91
STREET FLOW TRAVEL TIME(MIN.) =   7.63   Tc(MIN.) =  30.79
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.865
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
COMMERCIAL                 A        9.50      0.98      0.10    32
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       A        1.03      0.98      0.60    32
COMMERCIAL                 B        0.37      0.75      0.10    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.15
SUBAREA AREA(ACRES) =   10.90      SUBAREA RUNOFF(CFS) =   16.90
EFFECTIVE AREA(ACRES) =    132.21    AREA-AVERAGED Fm(INCH/HR) =  0.36
AREA-AVERAGED Fp(INCH/HR) =  0.94  AREA-AVERAGED Ap =  0.38
TOTAL AREA(ACRES) =    132.21        PEAK FLOW RATE(CFS) =     200.59
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.31   HALFSTREET FLOOD WIDTH(FEET) =  58.30
FLOW VELOCITY(FEET/SEC.) =  2.92   DEPTH*VELOCITY(FT*FT/SEC.) =   3.81

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  66.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =   6.14
PIPE-FLOW(CFS) =    145.97
PIPEFLOW TRAVEL TIME(MIN.) =   3.67    Tc(MIN.) =  26.83
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.026
SUBAREA AREA(ACRES) =   10.90      SUBAREA RUNOFF(CFS) =   18.47
TOTAL AREA(ACRES) =    132.21        PEAK FLOW RATE(CFS) =    200.59
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   54.63
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.84
  HALFSTREET FLOOD WIDTH(FEET) =   34.80
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.19
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.83
LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20449.00 =  6496.83 FEET.
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****************************************************************************
  FLOW PROCESS FROM NODE LR020449.0 TO NODE LR020449.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  26.83
  RAINFALL INTENSITY(INCH/HR) =   2.03
  AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.94
  AREA-AVERAGED Ap =  0.38
  EFFECTIVE STREAM AREA(ACRES) =   132.21
  TOTAL STREAM AREA(ACRES) =   132.21
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    200.59

****************************************************************************
  FLOW PROCESS FROM NODE LR020440.0 TO NODE LR020441.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   918.39
  ELEVATION DATA: UPSTREAM(FEET) =   1735.00  DOWNSTREAM(FEET) =   1706.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.596
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.189
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.48      0.75      0.60    56   12.60
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     13.51
  TOTAL AREA(ACRES) =      5.48   PEAK FLOW RATE(CFS) =     13.51

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020441.0 TO NODE LR020442.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1706.00  DOWNSTREAM ELEVATION(FEET) = 1705.00
  STREET LENGTH(FEET) =   478.44   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
```

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  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      18.63
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.60
    HALFSTREET FLOOD WIDTH(FEET) =   23.20
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.62
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.98
  STREET FLOW TRAVEL TIME(MIN.) =   4.92   Tc(MIN.) =  17.52
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.616
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.22      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    5.22      SUBAREA RUNOFF(CFS) =   10.18
  EFFECTIVE AREA(ACRES) =     10.70    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     10.70        PEAK FLOW RATE(CFS) =      20.87

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.62   HALFSTREET FLOOD WIDTH(FEET) =  24.24
  FLOW VELOCITY(FEET/SEC.) =  1.67   DEPTH*VELOCITY(FT*FT/SEC.) =   1.04
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  478.4 FT WITH ELEVATION-DROP =   1.0 FT, IS   10.5 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20442.00
  LONGEST FLOWPATH FROM NODE  20440.00 TO NODE  20442.00 =  1396.83 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020442.0 TO NODE LR020443.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1705.00  DOWNSTREAM ELEVATION(FEET) = 1704.00
  STREET LENGTH(FEET) =   220.75   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      26.92
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
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    STREET FLOW DEPTH(FEET) =  0.60
    HALFSTREET FLOOD WIDTH(FEET) =   23.08
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.36
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.42
  STREET FLOW TRAVEL TIME(MIN.) =   1.56   Tc(MIN.) =  19.07
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.486
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        6.59      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    6.59      SUBAREA RUNOFF(CFS) =   12.08
  EFFECTIVE AREA(ACRES) =     17.29    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     17.29        PEAK FLOW RATE(CFS) =      31.70

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.63   HALFSTREET FLOOD WIDTH(FEET) =  24.55
  FLOW VELOCITY(FEET/SEC.) =  2.48   DEPTH*VELOCITY(FT*FT/SEC.) =   1.57
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  220.8 FT WITH ELEVATION-DROP =   1.0 FT, IS   18.4 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20443.00
  LONGEST FLOWPATH FROM NODE  20440.00 TO NODE  20443.00 =  1617.58 FEET.

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  FLOW PROCESS FROM NODE LR020443.0 TO NODE LR020444.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1704.00  DOWNSTREAM ELEVATION(FEET) = 1702.00
  STREET LENGTH(FEET) =   263.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      37.93
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.62
    HALFSTREET FLOOD WIDTH(FEET) =   23.81
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.14
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.94
  STREET FLOW TRAVEL TIME(MIN.) =   1.40   Tc(MIN.) =  20.47
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.383
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 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        7.15      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =    7.15      SUBAREA RUNOFF(CFS) =   12.45
 EFFECTIVE AREA(ACRES) =     24.44    AREA-AVERAGED Fm(INCH/HR) =  0.45
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =     24.44        PEAK FLOW RATE(CFS) =      42.54

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.64   HALFSTREET FLOOD WIDTH(FEET) =  24.85
 FLOW VELOCITY(FEET/SEC.) =  3.25   DEPTH*VELOCITY(FT*FT/SEC.) =   2.07
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  263.5 FT WITH ELEVATION-DROP =   2.0 FT, IS   20.4 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20444.00
 LONGEST FLOWPATH FROM NODE  20440.00 TO NODE  20444.00 =  1881.08 FEET.

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 FLOW PROCESS FROM NODE LR020444.0 TO NODE LR020445.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1702.00  DOWNSTREAM ELEVATION(FEET) = 1701.00
 STREET LENGTH(FEET) =   498.43   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      53.57
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.84
   HALFSTREET FLOOD WIDTH(FEET) =   35.23
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.10
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.77
 STREET FLOW TRAVEL TIME(MIN.) =   3.96   Tc(MIN.) =  24.43
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.143
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       14.46      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
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 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =   14.46      SUBAREA RUNOFF(CFS) =   22.05
 EFFECTIVE AREA(ACRES) =     38.90    AREA-AVERAGED Fm(INCH/HR) =  0.45
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =     38.90        PEAK FLOW RATE(CFS) =      59.31

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.87   HALFSTREET FLOOD WIDTH(FEET) =  36.69
 FLOW VELOCITY(FEET/SEC.) =  2.14   DEPTH*VELOCITY(FT*FT/SEC.) =   1.87
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  498.4 FT WITH ELEVATION-DROP =   1.0 FT, IS   28.7 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20445.00
 LONGEST FLOWPATH FROM NODE  20440.00 TO NODE  20445.00 =  2379.51 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020445.0 TO NODE LR020446.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1701.00  DOWNSTREAM ELEVATION(FEET) = 1700.00
 STREET LENGTH(FEET) =   790.41   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      73.25
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  1.01
   HALFSTREET FLOOD WIDTH(FEET) =   43.71
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.88
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.91
 STREET FLOW TRAVEL TIME(MIN.) =   7.00   Tc(MIN.) =  31.44
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.842
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       22.19      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =   22.19      SUBAREA RUNOFF(CFS) =   27.83
 EFFECTIVE AREA(ACRES) =     61.09    AREA-AVERAGED Fm(INCH/HR) =  0.45
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =     61.09        PEAK FLOW RATE(CFS) =      76.61
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  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.03   HALFSTREET FLOOD WIDTH(FEET) =  44.50
  FLOW VELOCITY(FEET/SEC.) =  1.90   DEPTH*VELOCITY(FT*FT/SEC.) =   1.96

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.43
  PIPE-FLOW(CFS) =     33.00
  PIPEFLOW TRAVEL TIME(MIN.) =   3.84    Tc(MIN.) =  28.28
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.963
  SUBAREA AREA(ACRES) =   22.19      SUBAREA RUNOFF(CFS) =   30.24
  TOTAL AREA(ACRES) =     61.09        PEAK FLOW RATE(CFS) =     83.25

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   50.26
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.89
    HALFSTREET FLOOD WIDTH(FEET) =   37.61
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.73
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.55
  LONGEST FLOWPATH FROM NODE  20440.00 TO NODE  20446.00 =  3169.92 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020446.0 TO NODE LR020447.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1700.00  DOWNSTREAM ELEVATION(FEET) = 1670.00
  STREET LENGTH(FEET) =   962.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.83

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     101.94
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.71
    HALFSTREET FLOOD WIDTH(FEET) =   28.38
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.42
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    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.58
  STREET FLOW TRAVEL TIME(MIN.) =   2.50   Tc(MIN.) =  30.78
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.866
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.08      0.75      0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       24.90      0.98      0.60    32
  SCHOOL                     A        1.29      0.98      0.60    32
  SCHOOL                     B        3.53      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.93
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   31.80      SUBAREA RUNOFF(CFS) =   37.34
  EFFECTIVE AREA(ACRES) =     92.89    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.81  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     92.89        PEAK FLOW RATE(CFS) =     115.25

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.74   HALFSTREET FLOOD WIDTH(FEET) =  29.48
  FLOW VELOCITY(FEET/SEC.) =  6.72   DEPTH*VELOCITY(FT*FT/SEC.) =   4.95
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.71
  PIPE-FLOW(CFS) =     36.83
  PIPEFLOW TRAVEL TIME(MIN.) =   1.37    Tc(MIN.) =  29.65
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.908
  SUBAREA AREA(ACRES) =   31.80      SUBAREA RUNOFF(CFS) =   38.56
  TOTAL AREA(ACRES) =     92.89        PEAK FLOW RATE(CFS) =    118.79

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   81.96
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.68
    HALFSTREET FLOOD WIDTH(FEET) =   26.40
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.93
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.01
  LONGEST FLOWPATH FROM NODE  20440.00 TO NODE  20447.00 =  4131.92 FEET.

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  FLOW PROCESS FROM NODE LR020447.0 TO NODE LR020448.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1670.00  DOWNSTREAM ELEVATION(FEET) = 1645.00
  STREET LENGTH(FEET) =   877.54   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
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OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.85

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     143.57
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.79
  HALFSTREET FLOOD WIDTH(FEET) =   32.23
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.99
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.53
STREET FLOW TRAVEL TIME(MIN.) =   2.09   Tc(MIN.) =  31.74
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.832
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       A        9.63      0.98      0.60    32
COMMERCIAL                 A       12.07      0.98      0.10    32
COMMERCIAL                 B        0.31      0.75      0.10    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        2.23      0.75      0.60    56
SCHOOL                     B       11.63      0.75      0.60    56
SCHOOL                     A        1.95      0.98      0.60    32
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.44
SUBAREA AREA(ACRES) =   37.82      SUBAREA RUNOFF(CFS) =   49.57
EFFECTIVE AREA(ACRES) =    130.71    AREA-AVERAGED Fm(INCH/HR) =  0.45
AREA-AVERAGED Fp(INCH/HR) =  0.82  AREA-AVERAGED Ap =  0.55
TOTAL AREA(ACRES) =    130.71        PEAK FLOW RATE(CFS) =     161.96

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.82   HALFSTREET FLOOD WIDTH(FEET) =  33.57
FLOW VELOCITY(FEET/SEC.) =  7.26   DEPTH*VELOCITY(FT*FT/SEC.) =   5.94
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  12.11
PIPE-FLOW(CFS) =     48.19
PIPEFLOW TRAVEL TIME(MIN.) =   1.21    Tc(MIN.) =  30.86
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.863
SUBAREA AREA(ACRES) =   37.82      SUBAREA RUNOFF(CFS) =   50.64
TOTAL AREA(ACRES) =    130.71        PEAK FLOW RATE(CFS) =    165.65

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  117.46
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.75
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  HALFSTREET FLOOD WIDTH(FEET) =   30.15
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.54
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.90
LONGEST FLOWPATH FROM NODE  20440.00 TO NODE  20448.00 =  5009.46 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020448.0 TO NODE LR020449.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1645.00  DOWNSTREAM ELEVATION(FEET) = 1625.00
 STREET LENGTH(FEET) =   820.27   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.88

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     184.63
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.87
   HALFSTREET FLOOD WIDTH(FEET) =   36.13
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.13
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.20
 STREET FLOW TRAVEL TIME(MIN.) =   1.92   Tc(MIN.) =  32.77
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.797
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 A        3.48      0.98      0.10    32
 COMMERCIAL                 B        6.53      0.75      0.10    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        0.34      0.98      0.60    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.38      0.75      0.60    56
 SCHOOL                     A        0.64      0.98      0.60    32
 SCHOOL                     B       16.30      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.77
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.43
 SUBAREA AREA(ACRES) =   28.67      SUBAREA RUNOFF(CFS) =   37.97
 EFFECTIVE AREA(ACRES) =    159.38    AREA-AVERAGED Fm(INCH/HR) =  0.43
 AREA-AVERAGED Fp(INCH/HR) =  0.81  AREA-AVERAGED Ap =  0.53
 TOTAL AREA(ACRES) =    159.38        PEAK FLOW RATE(CFS) =     195.83

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.89   HALFSTREET FLOOD WIDTH(FEET) =  36.92
 FLOW VELOCITY(FEET/SEC.) =  7.24   DEPTH*VELOCITY(FT*FT/SEC.) =   6.41
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  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.88
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.02
  PIPE-FLOW(CFS) =     59.05
  PIPEFLOW TRAVEL TIME(MIN.) =   1.14    Tc(MIN.) =  31.99
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.823
  SUBAREA AREA(ACRES) =   28.67      SUBAREA RUNOFF(CFS) =   38.64
  TOTAL AREA(ACRES) =    159.38        PEAK FLOW RATE(CFS) =    199.58

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  140.54
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.80
    HALFSTREET FLOOD WIDTH(FEET) =   32.84
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.59
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.29
  LONGEST FLOWPATH FROM NODE  20440.00 TO NODE  20449.00 =  5829.73 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020449.0 TO NODE LR020449.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  31.99
  RAINFALL INTENSITY(INCH/HR) =   1.82
  AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.81
  AREA-AVERAGED Ap =  0.53
  EFFECTIVE STREAM AREA(ACRES) =   159.38
  TOTAL STREAM AREA(ACRES) =   159.38
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    199.58

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    200.59  26.83    2.026  0.94( 0.36) 0.38   132.2 LR020420.0
      2    199.58  31.99    1.823  0.81( 0.43) 0.53   159.4 LR020440.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    392.39  26.83    2.026  0.87( 0.39) 0.45   265.9 LR020420.0
      2    375.80  31.99    1.823  0.86( 0.40) 0.46   291.6 LR020440.0
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  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    392.39    Tc(MIN.) =    26.83
  EFFECTIVE AREA(ACRES) =   265.88   AREA-AVERAGED Fm(INCH/HR) =  0.39
  AREA-AVERAGED Fp(INCH/HR) =  0.87  AREA-AVERAGED Ap =  0.45
  TOTAL AREA(ACRES) =    291.59
  LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20449.00 =  6496.83 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020449.0 TO NODE LR020450.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1625.00  DOWNSTREAM ELEVATION(FEET) = 1595.00
  STREET LENGTH(FEET) =  1304.02   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.89

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     468.91
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.18
    HALFSTREET FLOOD WIDTH(FEET) =   51.51
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.87
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   10.44
  STREET FLOW TRAVEL TIME(MIN.) =   2.45   Tc(MIN.) =  29.28
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.922
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                A       33.74      0.98       0.10    32
  MOBILE HOME PARK          B       22.38      0.75       0.25    56
  COMMERCIAL                B       19.61      0.75       0.10    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                B        9.23      0.63       1.00    65
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"      B        8.18      0.75       0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"      A        7.04      0.98       0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.77
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.29
  SUBAREA AREA(ACRES) =  100.18      SUBAREA RUNOFF(CFS) =  153.04
  EFFECTIVE AREA(ACRES) =    366.06    AREA-AVERAGED Fm(INCH/HR) =  0.35
  AREA-AVERAGED Fp(INCH/HR) =  0.85  AREA-AVERAGED Ap =  0.41
  TOTAL AREA(ACRES) =    391.77        PEAK FLOW RATE(CFS) =     518.77

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
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  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.22   HALFSTREET FLOOD WIDTH(FEET) =  53.53
  FLOW VELOCITY(FEET/SEC.) =  9.09   DEPTH*VELOCITY(FT*FT/SEC.) =  11.06

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.89
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.54
  PIPE-FLOW(CFS) =    364.27
  PIPEFLOW TRAVEL TIME(MIN.) =   1.17    Tc(MIN.) =  28.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.975
  SUBAREA AREA(ACRES) =  100.18      SUBAREA RUNOFF(CFS) =  157.74
  TOTAL AREA(ACRES) =    391.77        PEAK FLOW RATE(CFS) =    535.94

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  171.68
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.86
    HALFSTREET FLOOD WIDTH(FEET) =   35.58
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.84
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.87
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  1304.0 FT WITH ELEVATION-DROP =  30.0 FT, IS  285.1 CFS,
         WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  20450.00

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    535.94  28.00    1.975  0.85( 0.35) 0.41   366.1 LR020420.0
      2    503.99  33.21    1.783  0.85( 0.35) 0.42   391.8 LR020440.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    535.94  Tc(MIN.) =  28.00
  AREA-AVERAGED Fm(INCH/HR) =  0.35  AREA-AVERAGED Fp(INCH/HR) =  0.85
  AREA-AVERAGED Ap =  0.41  EFFECTIVE AREA(ACRES) =    366.06
  LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20450.00 =  7800.85 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020450.0 TO NODE LR020451.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1595.00  DOWNSTREAM(FEET) =   1530.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2921.86   CHANNEL SLOPE =  0.0222
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    535.94
  FLOW VELOCITY(FEET/SEC.) =  10.48   FLOW DEPTH(FEET) =   3.14
  TRAVEL TIME(MIN.) =   4.65   Tc(MIN.) =  32.65
  LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20451.00 = 10722.71 FEET.

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  FLOW PROCESS FROM NODE LR020451.0 TO NODE LR020451.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  32.65
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.801
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       19.78      0.75      0.60    56
  COMMERCIAL                 B        5.95      0.75      0.10    56
  MOBILE HOME PARK           B        6.72      0.75      0.25    56
  PUBLIC PARK                B        6.76      0.75      0.85    56
  SCHOOL                     B        5.51      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.52
  SUBAREA AREA(ACRES) =   44.72      SUBAREA RUNOFF(CFS) =   56.86
  EFFECTIVE AREA(ACRES) =    410.78   AREA-AVERAGED Fm(INCH/HR) =  0.38
  AREA-AVERAGED Fp(INCH/HR) =  0.83  AREA-AVERAGED Ap =  0.45
  TOTAL AREA(ACRES) =    436.49       PEAK FLOW RATE(CFS) =     535.94
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.21

****************************************************************************
  FLOW PROCESS FROM NODE LR020451.0 TO NODE LR020452.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1530.00  DOWNSTREAM(FEET) =   1510.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1273.13   CHANNEL SLOPE =  0.0157
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    535.94
  FLOW VELOCITY(FEET/SEC.) =   9.24   FLOW DEPTH(FEET) =   3.44
  TRAVEL TIME(MIN.) =   2.30   Tc(MIN.) =  34.95
  LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20452.00 = 11995.84 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020452.0 TO NODE LR020452.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  34.95
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.729
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        6.50      0.75      0.60    56
  COMMERCIAL                 B        3.31      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.25      0.98      0.60    32
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.07      0.61      1.00    66
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  PUBLIC PARK                B        0.12      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.44
  SUBAREA AREA(ACRES) =   10.25      SUBAREA RUNOFF(CFS) =   12.86
  EFFECTIVE AREA(ACRES) =    421.03   AREA-AVERAGED Fm(INCH/HR) =  0.38
  AREA-AVERAGED Fp(INCH/HR) =  0.83  AREA-AVERAGED Ap =  0.45
  TOTAL AREA(ACRES) =    446.74       PEAK FLOW RATE(CFS) =     535.94
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020452.0 TO NODE LR020452.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    535.94  34.95    1.729  0.83( 0.35) 0.42   421.0 LR020420.0
      2    506.39  40.27    1.588  0.83( 0.36) 0.43   446.7 LR020440.0
  LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20452.00 = 11995.84 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     3592.21    Tc(MIN.) =  42.53
  AREA-AVERAGED Fm(INCH/HR) =  0.58    Ybar = 0.54
  TOTAL AREA(ACRES) =    4897.39
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20452.00 = 27096.44 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.92;1H= 1.22;3H= 2.04;6H= 2.81;24H= 6.78
  S-GRAPH: VALLEY(DEV.)= 49.2%;VALLEY(UNDEV.)/DESERT= 50.8%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.71; LAG(HR) = 0.57; Fm(INCH/HR) = 0.56; Ybar = 0.53
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.78; 30M = 0.78; 1HR = 0.78;
  3HR = 0.97; 6HR = 0.98; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   5344.13
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20452.00 = 27096.44 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0322; Lca/L=0.4,n=.0289; Lca/L=0.5,n=.0265;Lca/L=0.6,n=.0248
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =    1474.83
  PEAK FLOW RATE(CFS) =    3923.84

****************************************************************************
  FLOW PROCESS FROM NODE LR020452.0 TO NODE LR020452.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020452.0 TO NODE LR020453.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
```



```
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1510.00  DOWNSTREAM(FEET) =   1440.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3395.49   CHANNEL SLOPE =  0.0206
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   6.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   3923.84
  FLOW VELOCITY(FEET/SEC.) =  32.10   FLOW DEPTH(FEET) =   5.37
  TRAVEL TIME(MIN.) =   1.76   Tc(MIN.) =  44.29
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20453.00 = 30491.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020453.0 TO NODE LR020453.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  44.29
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.500
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B       20.13      0.75      0.25    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       19.32      0.75      0.60    56
  SCHOOL                     B        8.94      0.75      0.60    56
  COMMERCIAL                 B        4.10      0.75      0.10    56
  PUBLIC PARK                B        1.64      0.75      0.85    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.19      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.44
  SUBAREA AREA(ACRES) =   54.32
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.93;1H= 1.22;3H= 2.04;6H= 2.81;24H= 6.77
  S-GRAPH: VALLEY(DEV.)= 49.7%;VALLEY(UNDEV.)/DESERT= 50.3%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.74; LAG(HR) = 0.59; Fm(INCH/HR) = 0.56; Ybar = 0.53
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.78; 30M = 0.78; 1HR = 0.78;
  3HR = 0.97; 6HR = 0.98; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   5398.45
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20453.00 = 30491.93 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0302; Lca/L=0.4,n=.0271; Lca/L=0.5,n=.0249;Lca/L=0.6,n=.0232
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =    1491.21
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   3833.57
  TOTAL AREA(ACRES) =   5398.45       PEAK FLOW RATE(CFS) =    3923.84
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020453.0 TO NODE LR020454.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1440.00  DOWNSTREAM(FEET) =   1395.00
```

```
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3128.68   CHANNEL SLOPE =  0.0144
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   6.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   3923.84
  FLOW VELOCITY(FEET/SEC.) =  28.14   FLOW DEPTH(FEET) =   5.87
  TRAVEL TIME(MIN.) =   1.85   Tc(MIN.) =  46.14
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20454.00 = 33620.61 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020454.0 TO NODE LR020454.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  46.14
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.463
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  SCHOOL                     B       17.44      0.75      0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.70      0.75      0.60    56
  PUBLIC PARK                B        9.17      0.75      0.85    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        5.37      0.75      0.50    56
  COMMERCIAL                 B        1.64      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
  SUBAREA AREA(ACRES) =   37.32
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.93;1H= 1.22;3H= 2.04;6H= 2.81;24H= 6.76
  S-GRAPH: VALLEY(DEV.)= 50.1%;VALLEY(UNDEV.)/DESERT= 49.9%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.77; LAG(HR) = 0.62; Fm(INCH/HR) = 0.56; Ybar = 0.53
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.78; 30M = 0.78; 1HR = 0.78;
  3HR = 0.97; 6HR = 0.98; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   5435.77
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20454.00 = 33620.61 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0288; Lca/L=0.4,n=.0259; Lca/L=0.5,n=.0238;Lca/L=0.6,n=.0222
  TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =    1500.02
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   3785.10
  TOTAL AREA(ACRES) =   5435.77       PEAK FLOW RATE(CFS) =    3923.84
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020454.0 TO NODE LR020454.0 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20454.dna
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =   5435.77  TC(MIN.) =     46.14
  AREA-AVERAGED Fm(INCH/HR)=  0.56   Ybar =  0.53
```



```
  PEAK FLOW RATE(CFS)   =   3923.84
============================================================================
============================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

```
************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                        Analysis prepared by:

                          County of San Bernardino
                        Transportation Flood Control

                          Water Resources Division

------------------------------------------------------------------------
  FILE NAME: LR0205ZZ.Z13
  TIME/DATE OF STUDY: 07:49 09/15/2004
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.2500

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)     (n)
===  =====  ========  =================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
```



```
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


************************************************************************
  FLOW PROCESS FROM NODE LR020500.0 TO NODE LR020501.0 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   672.35
  ELEVATION DATA: UPSTREAM(FEET) =   1595.00  DOWNSTREAM(FEET) =   1591.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.525
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.813
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.95      0.75       0.60    56   15.53
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.88      0.98       0.60    32   15.53
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 A        0.12      0.88       1.00    44   26.60
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.61
  SUBAREA RUNOFF(CFS) =      8.25
  TOTAL AREA(ACRES) =      3.95   PEAK FLOW RATE(CFS) =      8.25

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

************************************************************************
  FLOW PROCESS FROM NODE LR020501.0 TO NODE LR020502.0 IS CODE =  63
------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
========================================================================
  UPSTREAM ELEVATION(FEET) = 1591.00  DOWNSTREAM ELEVATION(FEET) = 1587.00
  STREET LENGTH(FEET) =   262.68   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
```

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 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      12.04
   ***STREET FLOW SPLITS OVER STREET-CROWN***
   FULL DEPTH(FEET) =    0.49   FLOOD WIDTH(FEET) =   18.00
   FULL HALF-STREET VELOCITY(FEET/SEC.) =    3.26
   SPLIT DEPTH(FEET) =    0.26   SPLIT FLOOD WIDTH(FEET) =    6.71
   SPLIT FLOW(CFS) =    1.08   SPLIT VELOCITY(FEET/SEC.) =    1.90
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.49
   HALFSTREET FLOOD WIDTH(FEET) =   18.00
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.26
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.59
 STREET FLOW TRAVEL TIME(MIN.) =   1.34   Tc(MIN.) =  16.87
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.677
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        3.30      0.75      0.60    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        0.37      0.98      0.60    32
 AGRICULTURAL FAIR COVER
 "ORCHARDS"                 A        0.16      0.88      1.00    44
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.78
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.62
 SUBAREA AREA(ACRES) =    3.83      SUBAREA RUNOFF(CFS) =    7.57
 EFFECTIVE AREA(ACRES) =      7.78    AREA-AVERAGED Fm(INCH/HR) =  0.49
 AREA-AVERAGED Fp(INCH/HR) =  0.79  AREA-AVERAGED Ap =  0.61
 TOTAL AREA(ACRES) =      7.78        PEAK FLOW RATE(CFS) =      15.34

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.49   HALFSTREET FLOOD WIDTH(FEET) =  18.00
 FLOW VELOCITY(FEET/SEC.) =  3.26   DEPTH*VELOCITY(FT*FT/SEC.) =   1.59
 LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20502.00 =   935.03 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020502.0 TO NODE LR020503.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1587.00  DOWNSTREAM ELEVATION(FEET) = 1580.00
 STREET LENGTH(FEET) =   296.66   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
```



```
 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.86

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      20.00
   ***STREET FLOW SPLITS OVER STREET-CROWN***
   FULL DEPTH(FEET) =    0.49   FLOOD WIDTH(FEET) =   18.00
   FULL HALF-STREET VELOCITY(FEET/SEC.) =    4.06
   SPLIT DEPTH(FEET) =    0.39   SPLIT FLOOD WIDTH(FEET) =   13.27
   SPLIT FLOW(CFS) =    6.37   SPLIT VELOCITY(FEET/SEC.) =    3.39
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.49
   HALFSTREET FLOOD WIDTH(FEET) =   18.00
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.06
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.97
 STREET FLOW TRAVEL TIME(MIN.) =   1.22   Tc(MIN.) =  18.08
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.567
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        2.45      0.75      0.60    56
 MOBILE HOME PARK           B        1.73      0.75      0.25    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        0.21      0.98      0.60    32
 MOBILE HOME PARK           A        0.20      0.98      0.25    32
 AGRICULTURAL FAIR COVER
 "ORCHARDS"                 A        0.11      0.88      1.00    44
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.77
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.47
 SUBAREA AREA(ACRES) =    4.70      SUBAREA RUNOFF(CFS) =    9.34
 EFFECTIVE AREA(ACRES) =     12.48    AREA-AVERAGED Fm(INCH/HR) =  0.44
 AREA-AVERAGED Fp(INCH/HR) =  0.79  AREA-AVERAGED Ap =  0.56
 TOTAL AREA(ACRES) =     12.48        PEAK FLOW RATE(CFS) =      23.91

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.49   HALFSTREET FLOOD WIDTH(FEET) =  18.00
 FLOW VELOCITY(FEET/SEC.) =  4.06   DEPTH*VELOCITY(FT*FT/SEC.) =   1.97
 LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20503.00 =  1231.69 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020503.0 TO NODE LR020504.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1580.00  DOWNSTREAM ELEVATION(FEET) = 1570.00
 STREET LENGTH(FEET) =   416.03   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
```

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  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.86

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      30.36
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.50
    HALFSTREET FLOOD WIDTH(FEET) =   18.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.26
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.12
  STREET FLOW TRAVEL TIME(MIN.) =   1.63   Tc(MIN.) =  19.71
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.437
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.28      0.75      0.60    56
  MOBILE HOME PARK           B        5.56      0.75      0.25    56
  MOBILE HOME PARK           A        0.58      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.77
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.27
  SUBAREA AREA(ACRES) =    6.42      SUBAREA RUNOFF(CFS) =   12.91
  EFFECTIVE AREA(ACRES) =     18.90    AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.78  AREA-AVERAGED Ap =  0.46
  TOTAL AREA(ACRES) =     18.90        PEAK FLOW RATE(CFS) =      35.36

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.52   HALFSTREET FLOOD WIDTH(FEET) =  18.81
  FLOW VELOCITY(FEET/SEC.) =  4.53   DEPTH*VELOCITY(FT*FT/SEC.) =   2.34
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20504.00 =  1647.72 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020504.0 TO NODE LR020505.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1570.00  DOWNSTREAM ELEVATION(FEET) = 1560.00
  STREET LENGTH(FEET) =   387.53   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84
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    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      40.59
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.53
    HALFSTREET FLOOD WIDTH(FEET) =   19.48
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.88
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.58
  STREET FLOW TRAVEL TIME(MIN.) =   1.32   Tc(MIN.) =  21.04
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.344
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.33      0.75      0.60    56
  MOBILE HOME PARK           B        1.58      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.51
  SUBAREA AREA(ACRES) =    5.91      SUBAREA RUNOFF(CFS) =   10.45
  EFFECTIVE AREA(ACRES) =     24.81    AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.77  AREA-AVERAGED Ap =  0.47
  TOTAL AREA(ACRES) =     24.81        PEAK FLOW RATE(CFS) =      44.23

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.54   HALFSTREET FLOOD WIDTH(FEET) =  20.09
  FLOW VELOCITY(FEET/SEC.) =  5.02   DEPTH*VELOCITY(FT*FT/SEC.) =   2.72
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20505.00 =  2035.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020505.0 TO NODE LR020506.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1560.00  DOWNSTREAM ELEVATION(FEET) = 1535.00
  STREET LENGTH(FEET) =  1240.51   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      58.04
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.61
    HALFSTREET FLOOD WIDTH(FEET) =   23.26
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.02
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.04
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 STREET FLOW TRAVEL TIME(MIN.) =   4.12   Tc(MIN.) =  25.15
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.106
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       14.33      0.75      0.60    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        4.53      0.98      0.60    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =   18.86      SUBAREA RUNOFF(CFS) =   27.57
 EFFECTIVE AREA(ACRES) =     43.67    AREA-AVERAGED Fm(INCH/HR) =  0.41
 AREA-AVERAGED Fp(INCH/HR) =  0.79  AREA-AVERAGED Ap =  0.53
 TOTAL AREA(ACRES) =     43.67        PEAK FLOW RATE(CFS) =      66.48

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.45

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.63   HALFSTREET FLOOD WIDTH(FEET) =  24.48
 FLOW VELOCITY(FEET/SEC.) =  5.23   DEPTH*VELOCITY(FT*FT/SEC.) =   3.29
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L = 1240.5 FT WITH ELEVATION-DROP =  25.0 FT, IS   39.5 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20506.00
 LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20506.00 =  3275.76 FEET.

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 FLOW PROCESS FROM NODE LR020506.0 TO NODE LR020507.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1535.00  DOWNSTREAM ELEVATION(FEET) = 1518.00
 STREET LENGTH(FEET) =   947.01   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      77.08
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.67
   HALFSTREET FLOOD WIDTH(FEET) =   26.44
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.24
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.50
 STREET FLOW TRAVEL TIME(MIN.) =   3.01   Tc(MIN.) =  28.17
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.968
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
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      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        6.54      0.75      0.60    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        9.86      0.98      0.60    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.88
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =   16.40      SUBAREA RUNOFF(CFS) =   21.21
 EFFECTIVE AREA(ACRES) =     60.07    AREA-AVERAGED Fm(INCH/HR) =  0.45
 AREA-AVERAGED Fp(INCH/HR) =  0.82  AREA-AVERAGED Ap =  0.55
 TOTAL AREA(ACRES) =     60.07        PEAK FLOW RATE(CFS) =      82.26

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.55

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.68   HALFSTREET FLOOD WIDTH(FEET) =  27.11
 FLOW VELOCITY(FEET/SEC.) =  5.33   DEPTH*VELOCITY(FT*FT/SEC.) =   3.64
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  947.0 FT WITH ELEVATION-DROP =  17.0 FT, IS   35.8 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20507.00
 LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20507.00 =  4222.77 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020507.0 TO NODE LR020508.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1518.00  DOWNSTREAM ELEVATION(FEET) = 1490.50
 STREET LENGTH(FEET) =  1523.12   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      92.69
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.71
   HALFSTREET FLOOD WIDTH(FEET) =   28.39
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.50
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.89
 STREET FLOW TRAVEL TIME(MIN.) =   4.62   Tc(MIN.) =  32.78
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.796
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       11.25      0.75      0.60    56
 RESIDENTIAL
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  "3-4 DWELLINGS/ACRE"       A        6.62      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.83
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   17.87      SUBAREA RUNOFF(CFS) =   20.86
  EFFECTIVE AREA(ACRES) =     77.94    AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.82  AREA-AVERAGED Ap =  0.56
  TOTAL AREA(ACRES) =     77.94        PEAK FLOW RATE(CFS) =      93.86

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.71   HALFSTREET FLOOD WIDTH(FEET) =  28.51
  FLOW VELOCITY(FEET/SEC.) =  5.52   DEPTH*VELOCITY(FT*FT/SEC.) =   3.92
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1523.1 FT WITH ELEVATION-DROP =  27.5 FT, IS   34.4 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20508.00
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20508.00 =  5745.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020508.0 TO NODE LR020509.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1490.50  DOWNSTREAM ELEVATION(FEET) = 1490.00
  STREET LENGTH(FEET) =   621.21   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      94.96
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.21
    HALFSTREET FLOOD WIDTH(FEET) =   53.10
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.69
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.04
  STREET FLOW TRAVEL TIME(MIN.) =   6.12   Tc(MIN.) =  38.90
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.621
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        2.36      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    2.36      SUBAREA RUNOFF(CFS) =    2.20
  EFFECTIVE AREA(ACRES) =     80.30    AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.83  AREA-AVERAGED Ap =  0.56
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  TOTAL AREA(ACRES) =     80.30        PEAK FLOW RATE(CFS) =      93.86
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.20   HALFSTREET FLOOD WIDTH(FEET) =  52.86
  FLOW VELOCITY(FEET/SEC.) =  1.69   DEPTH*VELOCITY(FT*FT/SEC.) =   2.03

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 1.07
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.86
  PIPE-FLOW(CFS) =     31.63
  PIPEFLOW TRAVEL TIME(MIN.) =   3.62    Tc(MIN.) =  36.40
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.687
  SUBAREA AREA(ACRES) =    2.36      SUBAREA RUNOFF(CFS) =    2.34
  TOTAL AREA(ACRES) =     80.30        PEAK FLOW RATE(CFS) =     93.86
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   62.23
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.05
    HALFSTREET FLOOD WIDTH(FEET) =   45.29
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.53
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.61
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20509.00 =  6367.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020509.0 TO NODE LR020518.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1490.00  DOWNSTREAM ELEVATION(FEET) = 1489.50
  STREET LENGTH(FEET) =   654.22   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      94.91
    ***STREET FLOWING FULL***
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  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  1.22
  HALFSTREET FLOOD WIDTH(FEET) =   53.59
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.66
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.02
 STREET FLOW TRAVEL TIME(MIN.) =   6.57   Tc(MIN.) =  42.97
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.527
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        2.47      0.98      0.60    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =    2.47      SUBAREA RUNOFF(CFS) =    2.09
 EFFECTIVE AREA(ACRES) =     82.77    AREA-AVERAGED Fm(INCH/HR) =  0.47
 AREA-AVERAGED Fp(INCH/HR) =  0.83  AREA-AVERAGED Ap =  0.56
 TOTAL AREA(ACRES) =     82.77        PEAK FLOW RATE(CFS) =      93.86
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 1.21   HALFSTREET FLOOD WIDTH(FEET) =  53.34
 FLOW VELOCITY(FEET/SEC.) =  1.66   DEPTH*VELOCITY(FT*FT/SEC.) =   2.01

 *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
        THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 1.07
 SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
 ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
 ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
 ASSUME FULL-FLOWING PIPELINE
 PIPE-FLOW VELOCITY(FEET/SEC.) =   2.91
 PIPE-FLOW(CFS) =     36.62
 PIPEFLOW TRAVEL TIME(MIN.) =   3.75    Tc(MIN.) =  40.14
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.591
 SUBAREA AREA(ACRES) =    2.47      SUBAREA RUNOFF(CFS) =    2.24
 TOTAL AREA(ACRES) =     82.77        PEAK FLOW RATE(CFS) =     93.86
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   57.25
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  1.03
   HALFSTREET FLOOD WIDTH(FEET) =   44.31
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.47
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.51
 LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20518.00 =  7021.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020518.0 TO NODE LR020518.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
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  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  40.14
  RAINFALL INTENSITY(INCH/HR) =   1.59
  AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.83
  AREA-AVERAGED Ap =  0.56
  EFFECTIVE STREAM AREA(ACRES) =    82.77
  TOTAL STREAM AREA(ACRES) =    82.77
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     93.86

****************************************************************************
  FLOW PROCESS FROM NODE LR020510.0 TO NODE LR020511.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   568.77
  ELEVATION DATA: UPSTREAM(FEET) =   1595.00  DOWNSTREAM(FEET) =   1590.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.909
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.683
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.24      0.98      0.60    32   13.43
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 A        0.98      0.88      1.00    44   23.01
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.57      0.75      0.60    56   13.43
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        1.82      0.63      1.00    65   23.01
  COMMERCIAL                 B        0.06      0.75      0.10    56    9.91
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.73
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.90
  SUBAREA RUNOFF(CFS) =     10.00
  TOTAL AREA(ACRES) =      3.67   PEAK FLOW RATE(CFS) =     10.00

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020511.0 TO NODE LR020512.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1590.00  DOWNSTREAM ELEVATION(FEET) = 1580.00
  STREET LENGTH(FEET) =   249.41   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
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  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.78

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      15.92
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.41
    HALFSTREET FLOOD WIDTH(FEET) =   12.73
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.40
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.82
  STREET FLOW TRAVEL TIME(MIN.) =   0.94   Tc(MIN.) =  10.85
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.487
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 A        1.59      0.88      1.00    44
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        2.00      0.63      1.00    65
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.46      0.75      0.60    56
  MOBILE HOME PARK           B        0.58      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.87
  SUBAREA AREA(ACRES) =    4.63      SUBAREA RUNOFF(CFS) =   11.85
  EFFECTIVE AREA(ACRES) =      8.30    AREA-AVERAGED Fm(INCH/HR) =  0.65
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.88
  TOTAL AREA(ACRES) =      8.30        PEAK FLOW RATE(CFS) =      21.20

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.45   HALFSTREET FLOOD WIDTH(FEET) =  14.37
  FLOW VELOCITY(FEET/SEC.) =  4.70   DEPTH*VELOCITY(FT*FT/SEC.) =   2.10
  LONGEST FLOWPATH FROM NODE  20510.00 TO NODE  20512.00 =   818.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020512.0 TO NODE LR020513.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1580.00  DOWNSTREAM ELEVATION(FEET) = 1575.00
  STREET LENGTH(FEET) =   306.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.98
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    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      30.33
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.56
    HALFSTREET FLOOD WIDTH(FEET) =   19.94
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.64
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.03
  STREET FLOW TRAVEL TIME(MIN.) =   1.40   Tc(MIN.) =  12.26
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.242
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 A        1.37      0.88      1.00    44
  MOBILE HOME PARK           A        1.25      0.98      0.25    32
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        1.07      0.63      1.00    65
  MOBILE HOME PARK           B        2.91      0.75      0.25    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.58      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.78
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.53
  SUBAREA AREA(ACRES) =    7.18      SUBAREA RUNOFF(CFS) =   18.26
  EFFECTIVE AREA(ACRES) =     15.48    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.72
  TOTAL AREA(ACRES) =     15.48        PEAK FLOW RATE(CFS) =      37.63

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.59   HALFSTREET FLOOD WIDTH(FEET) =  21.69
  FLOW VELOCITY(FEET/SEC.) =  3.84   DEPTH*VELOCITY(FT*FT/SEC.) =   2.28
  LONGEST FLOWPATH FROM NODE  20510.00 TO NODE  20513.00 =  1124.68 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020513.0 TO NODE LR020514.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1575.00  DOWNSTREAM ELEVATION(FEET) = 1570.00
  STREET LENGTH(FEET) =   416.53   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.06

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      51.26
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.68
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  HALFSTREET FLOOD WIDTH(FEET) =   26.61
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.68
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.50
STREET FLOW TRAVEL TIME(MIN.) =   1.89   Tc(MIN.) =  14.14
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.975
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
MOBILE HOME PARK           A        3.78      0.98      0.25    32
MOBILE HOME PARK           B        6.42      0.75      0.25    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        0.82      0.75      0.60    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.82
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.28
SUBAREA AREA(ACRES) =   11.02      SUBAREA RUNOFF(CFS) =   27.26
EFFECTIVE AREA(ACRES) =     26.50    AREA-AVERAGED Fm(INCH/HR) =  0.41
AREA-AVERAGED Fp(INCH/HR) =  0.77  AREA-AVERAGED Ap =  0.53
TOTAL AREA(ACRES) =     26.50        PEAK FLOW RATE(CFS) =      61.17

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.71   HALFSTREET FLOOD WIDTH(FEET) =  28.07
FLOW VELOCITY(FEET/SEC.) =  3.94   DEPTH*VELOCITY(FT*FT/SEC.) =   2.79
LONGEST FLOWPATH FROM NODE  20510.00 TO NODE  20514.00 =  1541.21 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020514.0 TO NODE LR020515.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1570.00  DOWNSTREAM ELEVATION(FEET) = 1565.00
  STREET LENGTH(FEET) =   392.53   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.04

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      73.51
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.74
    HALFSTREET FLOOD WIDTH(FEET) =   29.48
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.28
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.15
  STREET FLOW TRAVEL TIME(MIN.) =   1.53   Tc(MIN.) =  15.67
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.797
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
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     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
MOBILE HOME PARK           B        5.83      0.75      0.25    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        4.98      0.75      0.60    56
MOBILE HOME PARK           A        0.20      0.98      0.25    32
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.41
SUBAREA AREA(ACRES) =   11.01      SUBAREA RUNOFF(CFS) =   24.68
EFFECTIVE AREA(ACRES) =     37.51    AREA-AVERAGED Fm(INCH/HR) =  0.38
AREA-AVERAGED Fp(INCH/HR) =  0.76  AREA-AVERAGED Ap =  0.50
TOTAL AREA(ACRES) =     37.51        PEAK FLOW RATE(CFS) =      81.62

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.76   HALFSTREET FLOOD WIDTH(FEET) =  30.52
FLOW VELOCITY(FEET/SEC.) =  4.44   DEPTH*VELOCITY(FT*FT/SEC.) =   3.36
LONGEST FLOWPATH FROM NODE  20510.00 TO NODE  20515.00 =  1933.74 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020515.0 TO NODE LR020516.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1565.00  DOWNSTREAM ELEVATION(FEET) = 1530.00
  STREET LENGTH(FEET) =  1215.58   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     115.53
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.74
    HALFSTREET FLOOD WIDTH(FEET) =   29.91
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.54
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.87
  STREET FLOW TRAVEL TIME(MIN.) =   3.10   Tc(MIN.) =  18.77
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.510
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       20.48      0.75      0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        2.53      0.98      0.60    32
  MOBILE HOME PARK           B       12.12      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.77
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  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.48
  SUBAREA AREA(ACRES) =   35.13      SUBAREA RUNOFF(CFS) =   67.73
  EFFECTIVE AREA(ACRES) =     72.64    AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.77  AREA-AVERAGED Ap =  0.49
  TOTAL AREA(ACRES) =     72.64        PEAK FLOW RATE(CFS) =     139.66

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.96

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.78   HALFSTREET FLOOD WIDTH(FEET) =  31.86
  FLOW VELOCITY(FEET/SEC.) =  6.96   DEPTH*VELOCITY(FT*FT/SEC.) =   5.45
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1215.6 FT WITH ELEVATION-DROP =  35.0 FT, IS   93.7 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20516.00
  LONGEST FLOWPATH FROM NODE  20510.00 TO NODE  20516.00 =  3149.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020516.0 TO NODE LR020517.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1530.00  DOWNSTREAM ELEVATION(FEET) = 1510.00
  STREET LENGTH(FEET) =  1115.01   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.95

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     166.84
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.88
    HALFSTREET FLOOD WIDTH(FEET) =   36.80
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.21
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.48
  STREET FLOW TRAVEL TIME(MIN.) =   2.99   Tc(MIN.) =  21.76
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.297
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       23.04      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       11.30      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.90
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   34.34      SUBAREA RUNOFF(CFS) =   54.30
  EFFECTIVE AREA(ACRES) =    106.98    AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.81  AREA-AVERAGED Ap =  0.52
```



```
  TOTAL AREA(ACRES) =    106.98        PEAK FLOW RATE(CFS) =     180.03

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.90   HALFSTREET FLOOD WIDTH(FEET) =  37.84
  FLOW VELOCITY(FEET/SEC.) =  6.34   DEPTH*VELOCITY(FT*FT/SEC.) =   5.72
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1115.0 FT WITH ELEVATION-DROP =  20.0 FT, IS   71.2 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20517.00
  LONGEST FLOWPATH FROM NODE  20510.00 TO NODE  20517.00 =  4264.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020517.0 TO NODE LR020518.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1510.00  DOWNSTREAM ELEVATION(FEET) = 1489.50
  STREET LENGTH(FEET) =  1340.04   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.99

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     208.83
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.97
    HALFSTREET FLOOD WIDTH(FEET) =   41.08
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.23
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.03
  STREET FLOW TRAVEL TIME(MIN.) =   3.58   Tc(MIN.) =  25.35
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.096
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       37.81      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.14      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.95
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   41.95      SUBAREA RUNOFF(CFS) =   57.57
  EFFECTIVE AREA(ACRES) =    148.93    AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  0.55
  TOTAL AREA(ACRES) =    148.93        PEAK FLOW RATE(CFS) =     218.25

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
```

```
  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.98   HALFSTREET FLOOD WIDTH(FEET) =  41.75
  FLOW VELOCITY(FEET/SEC.) =  6.30   DEPTH*VELOCITY(FT*FT/SEC.) =   6.19
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1340.0 FT WITH ELEVATION-DROP =  20.5 FT, IS   79.2 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20518.00
  LONGEST FLOWPATH FROM NODE  20510.00 TO NODE  20518.00 =  5604.37 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020518.0 TO NODE LR020518.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  25.35
  RAINFALL INTENSITY(INCH/HR) =   2.10
  AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.86
  AREA-AVERAGED Ap =  0.55
  EFFECTIVE STREAM AREA(ACRES) =   148.93
  TOTAL STREAM AREA(ACRES) =   148.93
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    218.25

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1     93.86  40.14    1.591  0.83( 0.47) 0.56    82.8 LR020500.0
      2    218.25  25.35    2.096  0.86( 0.47) 0.55   148.9 LR020510.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    304.14  25.35    2.096  0.85( 0.47) 0.55   201.2 LR020510.0
      2    244.36  40.14    1.591  0.85( 0.47) 0.55   231.7 LR020500.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    304.14    Tc(MIN.) =    25.35
  EFFECTIVE AREA(ACRES) =   201.19   AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.85  AREA-AVERAGED Ap =  0.55
  TOTAL AREA(ACRES) =    231.70
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20518.00 =  7021.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020518.0 TO NODE LR020519.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1489.50
  DOWNSTREAM NODE ELEVATION(FEET) =  1440.00
  FLOW LENGTH(FEET) =  2632.61   MANNING'S N =  0.013
```



```
  USER SPECIFIED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  42.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.42
  PIPE-FLOW(CFS) =    304.14
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   2.31    Tc(MIN.) =  27.65
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.990
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  SCHOOL                     A       21.65      0.98       0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       27.03      0.98       0.60    32
  MOBILE HOME PARK           A        8.46      0.98       0.25    32
  SCHOOL                     B        7.51      0.75       0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.29      0.75       0.60    56
  MOBILE HOME PARK           B        2.31      0.75       0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.93
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.55
  SUBAREA AREA(ACRES) =   72.25      SUBAREA RUNOFF(CFS) =   96.33
  EFFECTIVE AREA(ACRES) =    273.44    AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.87  AREA-AVERAGED Ap =  0.55
  TOTAL AREA(ACRES) =    303.95        PEAK FLOW RATE(CFS) =    371.96

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 26.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   67.82
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.69
    HALFSTREET FLOOD WIDTH(FEET) =   27.04
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.71
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.24

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    371.96  27.65    1.990  0.87( 0.48) 0.55   273.4 LR020510.0
      2    289.87  42.53    1.537  0.87( 0.48) 0.55   304.0 LR020500.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    371.96  Tc(MIN.) =  27.65
  AREA-AVERAGED Fm(INCH/HR) =  0.48  AREA-AVERAGED Fp(INCH/HR) =  0.87
  AREA-AVERAGED Ap =  0.55  EFFECTIVE AREA(ACRES) =    273.44
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20519.00 =  9653.93 FEET.
```

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****************************************************************************
  FLOW PROCESS FROM NODE LR020519.0 TO NODE LR020520.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1440.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1410.00
  FLOW LENGTH(FEET) =  1552.52   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  66.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  66.0 INCH PIPE IS  44.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  21.81
  PIPE-FLOW(CFS) =    371.96
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.27    Tc(MIN.) =  28.92
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.937
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       13.85      0.98      0.60    32
  SCHOOL                     A       16.29      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       15.89      0.75      0.60    56
  PUBLIC PARK                B        9.87      0.75      0.85    56
  SCHOOL                     B       12.11      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.84
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.64
  SUBAREA AREA(ACRES) =   68.01      SUBAREA RUNOFF(CFS) =   85.72
  EFFECTIVE AREA(ACRES) =    341.45    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  0.57
  TOTAL AREA(ACRES) =    371.96        PEAK FLOW RATE(CFS) =    444.67

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 26.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   72.71
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.70
    HALFSTREET FLOOD WIDTH(FEET) =   27.53
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.87
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.40

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
```



```
    NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1    444.67  28.92    1.937  0.86( 0.49) 0.57   341.4 LR020510.0
       2    341.68  43.86    1.508  0.86( 0.49) 0.57   372.0 LR020500.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    444.67  Tc(MIN.) =  28.92
  AREA-AVERAGED Fm(INCH/HR) =  0.49  AREA-AVERAGED Fp(INCH/HR) =  0.86
  AREA-AVERAGED Ap =  0.57  EFFECTIVE AREA(ACRES) =    341.45
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20520.00 = 11206.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020520.0 TO NODE LR020536.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1410.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1395.00
  FLOW LENGTH(FEET) =  1041.51   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  72.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  72.0 INCH PIPE IS  52.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.27
  PIPE-FLOW(CFS) =    444.67
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.92    Tc(MIN.) =  29.84
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.901
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        3.22      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.36      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.88
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    5.58      SUBAREA RUNOFF(CFS) =    6.90
  EFFECTIVE AREA(ACRES) =    347.03    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  0.57
  TOTAL AREA(ACRES) =    377.54        PEAK FLOW RATE(CFS) =    444.67
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 26.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  *NOTE: ESTIMATED PEAK FLOW DEFAULTED TO UPSTREAM PEAK FLOW;
         STREET HYDRAULICS NOT COMPUTED*
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20536.00 = 12247.96 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR020536.0 TO NODE LR020536.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  29.84
  RAINFALL INTENSITY(INCH/HR) =   1.90
  AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.86
  AREA-AVERAGED Ap =  0.57
  EFFECTIVE STREAM AREA(ACRES) =   347.03
  TOTAL STREAM AREA(ACRES) =   377.54
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    444.67

****************************************************************************
  FLOW PROCESS FROM NODE LR020530.0 TO NODE LR020531.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   818.88
  ELEVATION DATA: UPSTREAM(FEET) =   1480.00  DOWNSTREAM(FEET) =   1470.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.549
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.925
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        5.33      0.98      0.60    32   14.55
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     11.22
  TOTAL AREA(ACRES) =      5.33   PEAK FLOW RATE(CFS) =     11.22

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020531.0 TO NODE LR020532.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1470.00  DOWNSTREAM ELEVATION(FEET) = 1465.00
  STREET LENGTH(FEET) =   771.13   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
```



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  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      29.29
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.58
    HALFSTREET FLOOD WIDTH(FEET) =   22.23
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.76
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.61
  STREET FLOW TRAVEL TIME(MIN.) =   4.66   Tc(MIN.) =  19.21
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.476
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       21.08      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   21.08      SUBAREA RUNOFF(CFS) =   35.88
  EFFECTIVE AREA(ACRES) =     26.41    AREA-AVERAGED Fm(INCH/HR) =  0.58
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     26.41        PEAK FLOW RATE(CFS) =      44.95

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.66   HALFSTREET FLOOD WIDTH(FEET) =  26.13
  FLOW VELOCITY(FEET/SEC.) =  3.12   DEPTH*VELOCITY(FT*FT/SEC.) =   2.07
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  771.1 FT WITH ELEVATION-DROP =   5.0 FT, IS   41.1 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20532.00
  LONGEST FLOWPATH FROM NODE  20530.00 TO NODE  20532.00 =  1590.01 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020532.0 TO NODE LR020533.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1465.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1455.00
  FLOW LENGTH(FEET) =  1024.14   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  23.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.89
  PIPE-FLOW(CFS) =     44.95
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.73    Tc(MIN.) =  20.93
  LONGEST FLOWPATH FROM NODE  20530.00 TO NODE  20533.00 =  2614.15 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020533.0 TO NODE LR020533.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
```

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==========================================================================
  MAINLINE Tc(MIN) =  20.93
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.351
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  SCHOOL                     A        1.18      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.68      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    2.86      SUBAREA RUNOFF(CFS) =    4.55
  EFFECTIVE AREA(ACRES) =     29.27   AREA-AVERAGED Fm(INCH/HR) =  0.58
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     29.27       PEAK FLOW RATE(CFS) =      46.53

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

**************************************************************************
  FLOW PROCESS FROM NODE LR020533.0 TO NODE LR020534.0 IS CODE =  63
--------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
==========================================================================
  UPSTREAM ELEVATION(FEET) = 1455.00  DOWNSTREAM ELEVATION(FEET) = 1430.00
  STREET LENGTH(FEET) =  1374.03   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      72.64
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.66
    HALFSTREET FLOOD WIDTH(FEET) =   25.83
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.16
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.39
  STREET FLOW TRAVEL TIME(MIN.) =   4.44   Tc(MIN.) =  25.37
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.095
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        3.88      0.98      0.60    32
  SCHOOL                     A       34.43      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   38.31      SUBAREA RUNOFF(CFS) =   52.07
  EFFECTIVE AREA(ACRES) =     67.58    AREA-AVERAGED Fm(INCH/HR) =  0.59
```



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  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     67.58       PEAK FLOW RATE(CFS) =      91.86

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.71   HALFSTREET FLOOD WIDTH(FEET) =  28.27
  FLOW VELOCITY(FEET/SEC.) =  5.50   DEPTH*VELOCITY(FT*FT/SEC.) =   3.88
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  22.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.78
  PIPE-FLOW(CFS) =     46.53
  PIPEFLOW TRAVEL TIME(MIN.) =   1.94    Tc(MIN.) =  22.87
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.229
  SUBAREA AREA(ACRES) =   38.31      SUBAREA RUNOFF(CFS) =   56.70
  TOTAL AREA(ACRES) =     67.58       PEAK FLOW RATE(CFS) =    100.02

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   53.48
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.60
    HALFSTREET FLOOD WIDTH(FEET) =   22.96
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.74
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.84
  LONGEST FLOWPATH FROM NODE  20530.00 TO NODE  20534.00 =  3988.18 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE LR020534.0 TO NODE LR020535.0 IS CODE =  63
--------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
==========================================================================
  UPSTREAM ELEVATION(FEET) = 1430.00  DOWNSTREAM ELEVATION(FEET) = 1396.00
  STREET LENGTH(FEET) =  1929.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     121.80
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.77
    HALFSTREET FLOOD WIDTH(FEET) =   31.75
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.83
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.52
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 STREET FLOW TRAVEL TIME(MIN.) =   5.52   Tc(MIN.) =  28.39
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.958
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A       35.20      0.98      0.60    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =   35.20      SUBAREA RUNOFF(CFS) =   43.51
 EFFECTIVE AREA(ACRES) =    102.78    AREA-AVERAGED Fm(INCH/HR) =  0.59
 AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =    102.78        PEAK FLOW RATE(CFS) =     127.04

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.79   HALFSTREET FLOOD WIDTH(FEET) =  32.30
 FLOW VELOCITY(FEET/SEC.) =  5.88   DEPTH*VELOCITY(FT*FT/SEC.) =   4.62
 ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
 ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
 ASSUME FULL-FLOWING PIPELINE
 PIPE-FLOW VELOCITY(FEET/SEC.) =  10.22
 PIPE-FLOW(CFS) =     50.20
 PIPEFLOW TRAVEL TIME(MIN.) =   3.15    Tc(MIN.) =  26.02
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.063
 SUBAREA AREA(ACRES) =   35.20      SUBAREA RUNOFF(CFS) =   46.84
 TOTAL AREA(ACRES) =    102.78        PEAK FLOW RATE(CFS) =    136.76

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   86.56
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.70
   HALFSTREET FLOOD WIDTH(FEET) =   27.78
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.35
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.72
 LONGEST FLOWPATH FROM NODE  20530.00 TO NODE  20535.00 =  5917.68 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020535.0 TO NODE LR020536.0 IS CODE =  33
----------------------------------------------------------------------------
 >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
 >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1396.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1395.00
 FLOW LENGTH(FEET) =  1300.63   MANNING'S N =  0.013

 USER SPECIFIED PIPE DIAMETER(INCH) =  72.00    NUMBER OF PIPES =   1
 USER SPECIFIED PIPE SYSTEM UNDER PRESSURE
 PIPE-FLOW VELOCITY(FEET/SEC.) =   3.83
 PIPE-FLOW(CFS) =    108.29
 PIPEFLOW TRAVEL TIME(MIN.) =   5.66    Tc(MIN.) =  31.69
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.833
```



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 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A       12.27      0.98      0.60    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.40      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =   12.67      SUBAREA RUNOFF(CFS) =   14.29
 EFFECTIVE AREA(ACRES) =    115.45    AREA-AVERAGED Fm(INCH/HR) =  0.58
 AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =    115.45        PEAK FLOW RATE(CFS) =    136.76
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

 STREET CROSS-SECTION INFORMATION:
 CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 26.00
 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   28.47
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.83
   HALFSTREET FLOOD WIDTH(FEET) =   34.36
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.22
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.01
 LONGEST FLOWPATH FROM NODE  20530.00 TO NODE  20536.00 =  7218.31 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020536.0 TO NODE LR020536.0 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  31.69
 RAINFALL INTENSITY(INCH/HR) =   1.83
 AREA-AVERAGED Fm(INCH/HR) =  0.58
 AREA-AVERAGED Fp(INCH/HR) =  0.97
 AREA-AVERAGED Ap =  0.60
 EFFECTIVE STREAM AREA(ACRES) =   115.45
 TOTAL STREAM AREA(ACRES) =   115.45
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    136.76

 ** CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
```

```
    1    444.67  29.84    1.901  0.86( 0.49) 0.57   347.0 LR020510.0
    1    341.68  44.82    1.489  0.86( 0.49) 0.57   377.5 LR020500.0
    2    136.76  31.69    1.833  0.97( 0.58) 0.60   115.4 LR020530.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
    1    580.40  29.84    1.901  0.89( 0.51) 0.57   455.8 LR020510.0
    2    568.74  31.69    1.833  0.89( 0.51) 0.58   466.2 LR020530.0
    3    440.71  44.82    1.489  0.89( 0.51) 0.57   493.0 LR020500.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    580.40    Tc(MIN.) =    29.84
  EFFECTIVE AREA(ACRES) =   455.75   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.89  AREA-AVERAGED Ap =  0.57
  TOTAL AREA(ACRES) =    492.99
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20536.00 = 12247.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020536.0 TO NODE LR020537.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1395.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1394.50
  FLOW LENGTH(FEET) =   877.02   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) = 144.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN 144.0 INCH PIPE IS 107.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.43
  PIPE-FLOW(CFS) =    580.40
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   2.45    Tc(MIN.) =  32.29
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.813
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       13.40      0.75      0.60    56
  SCHOOL                     B        8.54      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   21.94      SUBAREA RUNOFF(CFS) =   26.93
  EFFECTIVE AREA(ACRES) =    477.69    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.89  AREA-AVERAGED Ap =  0.58
  TOTAL AREA(ACRES) =    514.93        PEAK FLOW RATE(CFS) =    580.40
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 26.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
```



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  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  *NOTE: ESTIMATED PEAK FLOW DEFAULTED TO UPSTREAM PEAK FLOW;
         STREET HYDRAULICS NOT COMPUTED*
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =   877.0 FT WITH ELEVATION-DROP =   0.5 FT, IS   30.5 CFS,
         WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  20537.00
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20537.00 = 13124.98 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020537.0 TO NODE LR020538.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1394.50  DOWNSTREAM(FEET) =  1380.00
  FLOW LENGTH(FEET) =   851.83   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   6.00   GIVEN BOX HEIGHT(FEET) =   4.00
  *GIVEN BOX HEIGHT(FEET) =   4.00   ESTIMATED BOX BASEWIDTH(FEET) =    9.12
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  15.91
  BOX-FLOW(CFS) =    580.40
  BOX-FLOW TRAVEL TIME(MIN.) =   0.89    Tc(MIN.) =  33.18
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20538.00 = 13976.81 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020538.0 TO NODE LR020538.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  33.18
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.783
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        6.57      0.75      0.50    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        9.02      0.75      0.60    56
  COMMERCIAL                 B        6.87      0.75      0.10    56
  PUBLIC PARK                B        0.38      0.75      0.85    56
  SCHOOL                     B        0.45      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.43
  SUBAREA AREA(ACRES) =   23.29      SUBAREA RUNOFF(CFS) =   30.67
  EFFECTIVE AREA(ACRES) =    500.98   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.88  AREA-AVERAGED Ap =  0.57
  TOTAL AREA(ACRES) =    538.22       PEAK FLOW RATE(CFS) =     580.40
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR020538.0 TO NODE LR020539.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1380.00  DOWNSTREAM(FEET) =  1366.00
  FLOW LENGTH(FEET) =  1281.91   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   7.00   GIVEN BOX HEIGHT(FEET) =   4.00
  *GIVEN BOX HEIGHT(FEET) =   4.00   ESTIMATED BOX BASEWIDTH(FEET) =   10.99
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  13.20
  BOX-FLOW(CFS) =    580.40
  BOX-FLOW TRAVEL TIME(MIN.) =   1.62    Tc(MIN.) =  34.80
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20539.00 = 15258.72 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020539.0 TO NODE LR020539.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  34.80
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.733
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.02      0.75      0.60    56
  COMMERCIAL                 B        3.73      0.75      0.10    56
  PUBLIC PARK                B        1.42      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.31
  SUBAREA AREA(ACRES) =    5.17      SUBAREA RUNOFF(CFS) =    6.99
  EFFECTIVE AREA(ACRES) =    506.15   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.88  AREA-AVERAGED Ap =  0.57
  TOTAL AREA(ACRES) =    543.39       PEAK FLOW RATE(CFS) =     580.40
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020539.0 TO NODE LR020539.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020454.0 TO NODE LR020454.0 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20454.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     3923.84    Tc(MIN.) =  46.14
  AREA-AVERAGED Fm(INCH/HR) =  0.56    Ybar = 0.53
  TOTAL AREA(ACRES) =    5435.77
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20454.00 = 33620.61 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR020454.0 TO NODE LR020454.0 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     3923.84    Tc(MIN.) =  46.14
  AREA-AVERAGED Fm(INCH/HR) =  0.56    Ybar = 0.53
  TOTAL AREA(ACRES) =    5435.77
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20454.00 = 33620.61 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020454.0 TO NODE LR020454.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020454.0 TO NODE LR020539.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1395.00  DOWNSTREAM(FEET) =   1366.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1483.64   CHANNEL SLOPE =  0.0195
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   6.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   3923.84
  FLOW VELOCITY(FEET/SEC.) =  31.49   FLOW DEPTH(FEET) =   5.44
  TRAVEL TIME(MIN.) =   0.79   Tc(MIN.) =  46.93
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20539.00 = 35104.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020539.0 TO NODE LR020539.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  46.93
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.449
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        2.13      0.75      0.85    56
  SCHOOL                     B        8.75      0.75      0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.67      0.75      0.60    56
  COMMERCIAL                 B        0.11      0.75      0.10    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.07      0.75      0.50    56
  MOBILE HOME PARK           B        4.39      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.54
  SUBAREA AREA(ACRES) =   19.12
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.93;1H= 1.22;3H= 2.04;6H= 2.81;24H= 6.76
  S-GRAPH: VALLEY(DEV.)= 50.2%;VALLEY(UNDEV.)/DESERT= 49.8%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
```

```
  Tc(HR) = 0.78; LAG(HR) = 0.63; Fm(INCH/HR) = 0.56; Ybar = 0.53
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.77; 30M = 0.77; 1HR = 0.77;
  3HR = 0.96; 6HR = 0.98; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   5454.89
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20539.00 = 35104.25 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0282; Lca/L=0.4,n=.0253; Lca/L=0.5,n=.0233;Lca/L=0.6,n=.0217
  TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =    1505.08
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   3784.57
  TOTAL AREA(ACRES) =   5454.89       PEAK FLOW RATE(CFS) =    3923.84
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020539.0 TO NODE LR020539.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     3923.84    Tc(MIN.) =  46.93
  AREA-AVERAGED Fm(INCH/HR) =  0.56    Ybar = 0.53
  TOTAL AREA(ACRES) =    5454.89
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20539.00 = 35104.25 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    580.40  34.80    1.733  0.88( 0.50) 0.57   506.2 LR020510.0
      2    568.74  36.66    1.680  0.88( 0.50) 0.57   516.6 LR020530.0
      3    447.30  50.00    1.395  0.88( 0.50) 0.57   543.4 LR020500.0
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20539.00 = 15258.72 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.93;1H= 1.22;3H= 2.03;6H= 2.81;24H= 6.66
  S-GRAPH: VALLEY(DEV.)= 54.6%;VALLEY(UNDEV.)/DESERT= 45.4%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.78; LAG(HR) = 0.63; Fm(INCH/HR) = 0.55; Ybar = 0.53
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.76; 30M = 0.76; 1HR = 0.76;
  3HR = 0.96; 6HR = 0.98; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   5998.28
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20539.00 = 35104.25 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0282; Lca/L=0.4,n=.0253; Lca/L=0.5,n=.0233;Lca/L=0.6,n=.0217
  TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =    1625.51
  PEAK FLOW RATE(CFS) =    4124.36

****************************************************************************
  FLOW PROCESS FROM NODE LR020539.0 TO NODE LR020539.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR020539.0 TO NODE LR020539.0 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20539.DNA
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =   5998.28  TC(MIN.) =     46.93
  AREA-AVERAGED Fm(INCH/HR)=  0.55   Ybar =  0.53
  PEAK FLOW RATE(CFS)   =   4124.36
============================================================================
============================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

```
**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
         (c) Copyright 1983-2002 Advanced Engineering Software (aes)
             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                           County of San Bernardino
                         Transportation Flood Control

                          Water Resources Division

--------------------------------------------------------------------------
  FILE NAME: LR0206ZZ.Z13
  TIME/DATE OF STUDY: 07:51 09/15/2004
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.1500

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)     (n)
===  =====  ========  =================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
```



```
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


**************************************************************************
  FLOW PROCESS FROM NODE LR020600.0 TO NODE LR020601.0 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   667.14
  ELEVATION DATA: UPSTREAM(FEET) =   2277.00  DOWNSTREAM(FEET) =   2175.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.086
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.828
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.56      0.75       0.60    56    8.09
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.26      0.75       0.70    56    8.60
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.61       1.00    66   13.86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.71
  SUBAREA RUNOFF(CFS) =     18.21
  TOTAL AREA(ACRES) =      6.12   PEAK FLOW RATE(CFS) =     18.21

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

**************************************************************************
  FLOW PROCESS FROM NODE LR020601.0 TO NODE LR020602.0 IS CODE =  54
--------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2175.00  DOWNSTREAM(FEET) =   2160.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   204.73   CHANNEL SLOPE =  0.0733
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     18.21
  FLOW VELOCITY(FEET/SEC.) =   3.85   FLOW DEPTH(FEET) =   0.56
```

```
  TRAVEL TIME(MIN.) =   0.89   Tc(MIN.) =   8.97
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20602.00 =   871.87 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020602.0 TO NODE LR020602.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =   8.97
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.596
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        0.68      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.18      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    0.86      SUBAREA RUNOFF(CFS) =    2.39
  EFFECTIVE AREA(ACRES) =      6.98   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =      6.98       PEAK FLOW RATE(CFS) =      19.33

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020602.0 TO NODE LR020603.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2160.00  DOWNSTREAM(FEET) =   2145.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   268.43   CHANNEL SLOPE =  0.0559
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     19.33
  FLOW VELOCITY(FEET/SEC.) =   3.51   FLOW DEPTH(FEET) =   0.61
  TRAVEL TIME(MIN.) =   1.27   Tc(MIN.) =  10.25
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20603.00 =  1140.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020603.0 TO NODE LR020603.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  10.25
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.321
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.70      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =    1.70      SUBAREA RUNOFF(CFS) =    4.28
  EFFECTIVE AREA(ACRES) =      8.68   AREA-AVERAGED Fm(INCH/HR) =  0.52
```



```
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =      8.68       PEAK FLOW RATE(CFS) =      21.88

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020603.0 TO NODE LR020604.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2145.00  DOWNSTREAM(FEET) =   2135.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   214.72   CHANNEL SLOPE =  0.0466
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     21.88
  FLOW VELOCITY(FEET/SEC.) =   3.36   FLOW DEPTH(FEET) =   0.66
  TRAVEL TIME(MIN.) =   1.07   Tc(MIN.) =  11.31
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20604.00 =  1355.02 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020604.0 TO NODE LR020604.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  11.31
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.130
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.97      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.08      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =    2.05      SUBAREA RUNOFF(CFS) =    4.81
  EFFECTIVE AREA(ACRES) =     10.73   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     10.73       PEAK FLOW RATE(CFS) =      25.20

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020604.0 TO NODE LR020605.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2135.00  DOWNSTREAM(FEET) =   2125.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   174.03   CHANNEL SLOPE =  0.0575
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     25.20
  FLOW VELOCITY(FEET/SEC.) =   3.78   FLOW DEPTH(FEET) =   0.67
  TRAVEL TIME(MIN.) =   0.77   Tc(MIN.) =  12.08
```

```
 LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20605.00 =  1529.05 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020605.0 TO NODE LR020605.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  12.08
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.009
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        2.05      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.10      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
 SUBAREA AREA(ACRES) =    2.15      SUBAREA RUNOFF(CFS) =    4.82
 EFFECTIVE AREA(ACRES) =     12.88   AREA-AVERAGED Fm(INCH/HR) =  0.52
 AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.70
 TOTAL AREA(ACRES) =     12.88       PEAK FLOW RATE(CFS) =      28.85

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

****************************************************************************
 FLOW PROCESS FROM NODE LR020605.0 TO NODE LR020606.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   2125.00  DOWNSTREAM(FEET) =   2115.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   235.99   CHANNEL SLOPE =  0.0424
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
 MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
 CHANNEL FLOW THRU SUBAREA(CFS) =     28.85
 FLOW VELOCITY(FEET/SEC.) =   3.48   FLOW DEPTH(FEET) =   0.74
 TRAVEL TIME(MIN.) =   1.13   Tc(MIN.) =  13.21
 LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20606.00 =  1765.04 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020606.0 TO NODE LR020606.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  13.21
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.852
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        3.11      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.22      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
 SUBAREA AREA(ACRES) =    3.33      SUBAREA RUNOFF(CFS) =    6.99
```



```
 EFFECTIVE AREA(ACRES) =     16.21   AREA-AVERAGED Fm(INCH/HR) =  0.52
 AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.70
 TOTAL AREA(ACRES) =     16.21       PEAK FLOW RATE(CFS) =      34.02

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

****************************************************************************
 FLOW PROCESS FROM NODE LR020606.0 TO NODE LR020607.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   2115.00  DOWNSTREAM(FEET) =   2092.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   277.39   CHANNEL SLOPE =  0.0829
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
 MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
 CHANNEL FLOW THRU SUBAREA(CFS) =     34.02
 FLOW VELOCITY(FEET/SEC.) =   4.67   FLOW DEPTH(FEET) =   0.70
 TRAVEL TIME(MIN.) =   0.99   Tc(MIN.) =  14.20
 LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20607.00 =  2042.43 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020607.0 TO NODE LR020607.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  14.20
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.731
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        0.41      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.29      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.66
 SUBAREA AREA(ACRES) =    0.70      SUBAREA RUNOFF(CFS) =    1.41
 EFFECTIVE AREA(ACRES) =     16.91   AREA-AVERAGED Fm(INCH/HR) =  0.52
 AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.70
 TOTAL AREA(ACRES) =     16.91       PEAK FLOW RATE(CFS) =      34.02
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 4.00

****************************************************************************
 FLOW PROCESS FROM NODE LR020607.0 TO NODE LR020608.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   2092.00  DOWNSTREAM(FEET) =   2080.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   203.75   CHANNEL SLOPE =  0.0589
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
 MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
 CHANNEL FLOW THRU SUBAREA(CFS) =     34.02
```

```
  FLOW VELOCITY(FEET/SEC.) =   4.11   FLOW DEPTH(FEET) =   0.74
  TRAVEL TIME(MIN.) =   0.83   Tc(MIN.) =  15.02
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20608.00 =  2246.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020608.0 TO NODE LR020608.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  15.02
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.639
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.94      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.31      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.66
  SUBAREA AREA(ACRES) =    5.25      SUBAREA RUNOFF(CFS) =   10.15
  EFFECTIVE AREA(ACRES) =     22.16   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     22.16       PEAK FLOW RATE(CFS) =      42.43

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020608.0 TO NODE LR020609.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2080.00  DOWNSTREAM(FEET) =   2065.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   358.70   CHANNEL SLOPE =  0.0418
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     42.43
  FLOW VELOCITY(FEET/SEC.) =   3.83   FLOW DEPTH(FEET) =   0.86
  TRAVEL TIME(MIN.) =   1.56   Tc(MIN.) =  16.58
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20609.00 =  2604.88 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020609.0 TO NODE LR020609.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  16.58
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.487
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        5.77      0.75      0.10    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        7.52      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.91      0.75      0.60    56
```



```
  MOBILE HOME PARK           B        1.23      0.75      0.25    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.92      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.46
  SUBAREA AREA(ACRES) =   16.35      SUBAREA RUNOFF(CFS) =   31.54
  EFFECTIVE AREA(ACRES) =     38.51   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.59
  TOTAL AREA(ACRES) =     38.51       PEAK FLOW RATE(CFS) =      70.93

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020609.0 TO NODE LR020610.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2065.00  DOWNSTREAM ELEVATION(FEET) = 2060.00
  STREET LENGTH(FEET) =   360.92   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      76.21
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.69
    HALFSTREET FLOOD WIDTH(FEET) =   27.72
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.73
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.29
  STREET FLOW TRAVEL TIME(MIN.) =   1.27   Tc(MIN.) =  17.86
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.380
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        1.29      0.75      0.50    56
  COMMERCIAL                 B        2.79      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.24      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        0.95      0.75      0.70    56
  MOBILE HOME PARK           B        0.22      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.33
  SUBAREA AREA(ACRES) =    5.49      SUBAREA RUNOFF(CFS) =   10.55
  EFFECTIVE AREA(ACRES) =     44.00    AREA-AVERAGED Fm(INCH/HR) =  0.42
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.56
```

```
  TOTAL AREA(ACRES) =     44.00        PEAK FLOW RATE(CFS) =      77.75

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.70   HALFSTREET FLOOD WIDTH(FEET) =  27.90
  FLOW VELOCITY(FEET/SEC.) =  4.77   DEPTH*VELOCITY(FT*FT/SEC.) =   3.33
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20610.00 =  2965.80 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020610.0 TO NODE LR020611.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2060.00  DOWNSTREAM ELEVATION(FEET) = 2057.00
  STREET LENGTH(FEET) =   352.25   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      92.24
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.80
    HALFSTREET FLOOD WIDTH(FEET) =   32.85
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.13
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.29
  STREET FLOW TRAVEL TIME(MIN.) =   1.42   Tc(MIN.) =  19.28
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.273
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.30      0.75      0.50    56
  COMMERCIAL                 B        1.71      0.75      0.10    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        1.66      0.75      0.40    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.04      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       12.96      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   17.67      SUBAREA RUNOFF(CFS) =   28.96
  EFFECTIVE AREA(ACRES) =     61.67    AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.57
  TOTAL AREA(ACRES) =     61.67        PEAK FLOW RATE(CFS) =     102.48
```



```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.82   HALFSTREET FLOOD WIDTH(FEET) =  34.19
  FLOW VELOCITY(FEET/SEC.) =  4.25   DEPTH*VELOCITY(FT*FT/SEC.) =   3.50
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  352.2 FT WITH ELEVATION-DROP =   3.0 FT, IS   53.0 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20611.00
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20611.00 =  3318.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020611.0 TO NODE LR020612.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2057.00  DOWNSTREAM ELEVATION(FEET) = 2054.00
  STREET LENGTH(FEET) =   398.28   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     137.92
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.93
    HALFSTREET FLOOD WIDTH(FEET) =   39.44
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.33
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.02
  STREET FLOW TRAVEL TIME(MIN.) =   1.53   Tc(MIN.) =  20.81
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.171
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.48      0.75      0.50    56
  COMMERCIAL                 B        2.00      0.75      0.10    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       37.07      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        6.98      0.75      0.60    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.01      0.75      0.40    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.36      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.66
  SUBAREA AREA(ACRES) =   46.90      SUBAREA RUNOFF(CFS) =   70.85
  EFFECTIVE AREA(ACRES) =    108.57    AREA-AVERAGED Fm(INCH/HR) =  0.46
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  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.61
  TOTAL AREA(ACRES) =    108.57        PEAK FLOW RATE(CFS) =     167.67

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.99   HALFSTREET FLOOD WIDTH(FEET) =  42.61
  FLOW VELOCITY(FEET/SEC.) =  4.53   DEPTH*VELOCITY(FT*FT/SEC.) =   4.49

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.54
  PIPE-FLOW(CFS) =     53.37
  PIPEFLOW TRAVEL TIME(MIN.) =   0.88    Tc(MIN.) =  20.16
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.213
  SUBAREA AREA(ACRES) =   46.90      SUBAREA RUNOFF(CFS) =   72.62
  TOTAL AREA(ACRES) =    108.57        PEAK FLOW RATE(CFS) =    171.77

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  118.40
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.88
    HALFSTREET FLOOD WIDTH(FEET) =   37.12
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.19
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.69
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =   398.3 FT WITH ELEVATION-DROP =   3.0 FT, IS  132.1 CFS,
         WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  20612.00
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20612.00 =  3716.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020612.0 TO NODE LR020613.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2054.00  DOWNSTREAM ELEVATION(FEET) = 2050.00
  STREET LENGTH(FEET) =   366.37   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90
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  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     175.39
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.95
  HALFSTREET FLOOD WIDTH(FEET) =   40.29
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.28
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.00
STREET FLOW TRAVEL TIME(MIN.) =   1.16   Tc(MIN.) =  21.31
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.140
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"5-7 DWELLINGS/ACRE"       B        0.53      0.75      0.50    56
COMMERCIAL                 B        2.00      0.75      0.10    56
RESIDENTIAL
"2 DWELLINGS/ACRE"         B        1.58      0.75      0.70    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        0.26      0.75      0.60    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
SUBAREA AREA(ACRES) =    4.37      SUBAREA RUNOFF(CFS) =    7.25
EFFECTIVE AREA(ACRES) =    112.94    AREA-AVERAGED Fm(INCH/HR) =  0.45
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
TOTAL AREA(ACRES) =    112.94        PEAK FLOW RATE(CFS) =     171.90

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.94   HALFSTREET FLOOD WIDTH(FEET) =  39.99
FLOW VELOCITY(FEET/SEC.) =  5.26   DEPTH*VELOCITY(FT*FT/SEC.) =   4.94

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =   9.08
PIPE-FLOW(CFS) =     64.25
PIPEFLOW TRAVEL TIME(MIN.) =   0.67    Tc(MIN.) =  20.83
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.170
SUBAREA AREA(ACRES) =    4.37      SUBAREA RUNOFF(CFS) =    7.37
TOTAL AREA(ACRES) =    112.94        PEAK FLOW RATE(CFS) =    174.92

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  110.67
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.81
  HALFSTREET FLOOD WIDTH(FEET) =   33.58
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.75
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.86
LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20613.00 =  4082.70 FEET.
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  FLOW PROCESS FROM NODE LR020613.0 TO NODE LR020614.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2050.00  DOWNSTREAM ELEVATION(FEET) = 2047.00
  STREET LENGTH(FEET) =   389.73   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     179.46
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.01
    HALFSTREET FLOOD WIDTH(FEET) =   43.59
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.63
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.69
  STREET FLOW TRAVEL TIME(MIN.) =   1.40   Tc(MIN.) =  22.23
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.087
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.63      0.75      0.50    56
  COMMERCIAL                 B        2.36      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.24      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.47      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.43
  SUBAREA AREA(ACRES) =    5.70      SUBAREA RUNOFF(CFS) =    9.07
  EFFECTIVE AREA(ACRES) =    118.64    AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.59
  TOTAL AREA(ACRES) =    118.64        PEAK FLOW RATE(CFS) =     175.54

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.00   HALFSTREET FLOOD WIDTH(FEET) =  43.22
  FLOW VELOCITY(FEET/SEC.) =  4.61   DEPTH*VELOCITY(FT*FT/SEC.) =   4.63

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
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  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.04
  PIPE-FLOW(CFS) =     66.79
  PIPEFLOW TRAVEL TIME(MIN.) =   0.81    Tc(MIN.) =  21.64
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.121
  SUBAREA AREA(ACRES) =    5.70      SUBAREA RUNOFF(CFS) =    9.25
  TOTAL AREA(ACRES) =    118.64        PEAK FLOW RATE(CFS) =    179.19

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  112.40
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.86
    HALFSTREET FLOOD WIDTH(FEET) =   36.20
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.17
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.60
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20614.00 =  4472.43 FEET.

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  FLOW PROCESS FROM NODE LR020614.0 TO NODE LR020615.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2047.00  DOWNSTREAM ELEVATION(FEET) = 2044.00
  STREET LENGTH(FEET) =   324.66   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     183.43
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.99
    HALFSTREET FLOOD WIDTH(FEET) =   42.37
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.01
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.94
  STREET FLOW TRAVEL TIME(MIN.) =   1.08   Tc(MIN.) =  22.72
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.060
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.61      0.75      0.50    56
  COMMERCIAL                 B        1.87      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.40      0.75      0.60    56
  RESIDENTIAL
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"2 DWELLINGS/ACRE"         B        2.63      0.75      0.70    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.47
SUBAREA AREA(ACRES) =    5.51      SUBAREA RUNOFF(CFS) =    8.48
EFFECTIVE AREA(ACRES) =    124.15    AREA-AVERAGED Fm(INCH/HR) =  0.44
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.59
TOTAL AREA(ACRES) =    124.15        PEAK FLOW RATE(CFS) =     181.15

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.98   HALFSTREET FLOOD WIDTH(FEET) =  42.18
FLOW VELOCITY(FEET/SEC.) =  4.99   DEPTH*VELOCITY(FT*FT/SEC.) =   4.91

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =   8.81
PIPE-FLOW(CFS) =     73.18
PIPEFLOW TRAVEL TIME(MIN.) =   0.61    Tc(MIN.) =  22.25
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.085
SUBAREA AREA(ACRES) =    5.51      SUBAREA RUNOFF(CFS) =    8.61
TOTAL AREA(ACRES) =    124.15        PEAK FLOW RATE(CFS) =    184.03

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  110.85
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.83
  HALFSTREET FLOOD WIDTH(FEET) =   34.74
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.46
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.72
LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20615.00 =  4797.09 FEET.

****************************************************************************
FLOW PROCESS FROM NODE LR020615.0 TO NODE LR020616.0 IS CODE =  63
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 2044.00  DOWNSTREAM ELEVATION(FEET) = 2042.00
STREET LENGTH(FEET) =   320.06   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
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MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     192.77
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  1.07
  HALFSTREET FLOOD WIDTH(FEET) =   46.70
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.35
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.67
STREET FLOW TRAVEL TIME(MIN.) =   1.23   Tc(MIN.) =  23.48
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.019
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"5-7 DWELLINGS/ACRE"        B        2.51      0.75      0.50    56
COMMERCIAL                  B        0.24      0.75      0.10    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"        B        2.23      0.75      0.60    56
RESIDENTIAL
"2 DWELLINGS/ACRE"          B        7.57      0.75      0.70    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
SUBAREA AREA(ACRES) =   12.55      SUBAREA RUNOFF(CFS) =   17.48
EFFECTIVE AREA(ACRES) =    136.70    AREA-AVERAGED Fm(INCH/HR) =  0.44
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.59
TOTAL AREA(ACRES) =    136.70        PEAK FLOW RATE(CFS) =     194.12

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.08   HALFSTREET FLOOD WIDTH(FEET) =  46.88
FLOW VELOCITY(FEET/SEC.) =  4.34   DEPTH*VELOCITY(FT*FT/SEC.) =   4.68

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =   7.97
PIPE-FLOW(CFS) =     88.14
PIPEFLOW TRAVEL TIME(MIN.) =   0.67    Tc(MIN.) =  22.92
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.049
SUBAREA AREA(ACRES) =   12.55      SUBAREA RUNOFF(CFS) =   17.81
TOTAL AREA(ACRES) =    136.70        PEAK FLOW RATE(CFS) =    197.74

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  109.59
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.89
  HALFSTREET FLOOD WIDTH(FEET) =   37.36
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.83
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.39
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 LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20616.00 =  5117.15 FEET.

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 FLOW PROCESS FROM NODE LR020616.0 TO NODE LR020648.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2042.00  DOWNSTREAM ELEVATION(FEET) = 2025.00
 STREET LENGTH(FEET) =   522.92   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.79

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     203.45
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.83
   HALFSTREET FLOOD WIDTH(FEET) =   34.43
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.32
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.90
 STREET FLOW TRAVEL TIME(MIN.) =   1.05   Tc(MIN.) =  23.97
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.995
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        2.43      0.75      0.50    56
 COMMERCIAL                 B        2.02      0.75      0.10    56
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        3.04      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.27      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.48
 SUBAREA AREA(ACRES) =    7.76      SUBAREA RUNOFF(CFS) =   11.43
 EFFECTIVE AREA(ACRES) =    144.46    AREA-AVERAGED Fm(INCH/HR) =  0.44
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.58
 TOTAL AREA(ACRES) =    144.46        PEAK FLOW RATE(CFS) =     202.51

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.83   HALFSTREET FLOOD WIDTH(FEET) =  34.37
 FLOW VELOCITY(FEET/SEC.) =  8.31   DEPTH*VELOCITY(FT*FT/SEC.) =   6.88

 *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
        THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.79
 SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
```



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 ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
 ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
 ASSUME FULL-FLOWING PIPELINE
 PIPE-FLOW VELOCITY(FEET/SEC.) =  15.67
 PIPE-FLOW(CFS) =    110.88
 PIPEFLOW TRAVEL TIME(MIN.) =   0.56    Tc(MIN.) =  23.47
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.019
 SUBAREA AREA(ACRES) =    7.76      SUBAREA RUNOFF(CFS) =   11.61
 TOTAL AREA(ACRES) =    144.46        PEAK FLOW RATE(CFS) =    205.75

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   94.87
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.65
   HALFSTREET FLOOD WIDTH(FEET) =   25.58
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.86
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.47
 LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20648.00 =  5640.07 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020648.0 TO NODE LR020648.0 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE LR020620.0 TO NODE LR020621.0 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   866.66
 ELEVATION DATA: UPSTREAM(FEET) =   2190.00  DOWNSTREAM(FEET) =   2160.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.083
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.008
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "OPEN BRUSH"               B       11.35      0.61      1.00    66   20.71
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.89      0.75      0.60    56   12.08
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.62
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.97
 SUBAREA RUNOFF(CFS) =     26.50
 TOTAL AREA(ACRES) =     12.24   PEAK FLOW RATE(CFS) =     26.50

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.53

****************************************************************************
 FLOW PROCESS FROM NODE LR020621.0 TO NODE LR020622.0 IS CODE =  54
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2160.00  DOWNSTREAM(FEET) =   2150.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   356.13   CHANNEL SLOPE =  0.0281
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  35.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     26.50
  FLOW VELOCITY(FEET/SEC.) =   2.40   FLOW DEPTH(FEET) =   0.56
  TRAVEL TIME(MIN.) =   2.47   Tc(MIN.) =  14.56
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20622.00 =  1222.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020622.0 TO NODE LR020622.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  14.56
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.690
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.73      0.61      1.00    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.57      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.62      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.66
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.84
  SUBAREA AREA(ACRES) =    6.92      SUBAREA RUNOFF(CFS) =   13.30
  EFFECTIVE AREA(ACRES) =     19.16   AREA-AVERAGED Fm(INCH/HR) =  0.58
  AREA-AVERAGED Fp(INCH/HR) =  0.63  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     19.16       PEAK FLOW RATE(CFS) =      36.30

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020622.0 TO NODE LR020623.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2150.00  DOWNSTREAM(FEET) =   2145.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   158.50   CHANNEL SLOPE =  0.0315
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  35.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     36.30
  FLOW VELOCITY(FEET/SEC.) =   2.69   FLOW DEPTH(FEET) =   0.62
  TRAVEL TIME(MIN.) =   0.98   Tc(MIN.) =  15.54
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20623.00 =  1381.29 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020623.0 TO NODE LR020623.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```



```
  MAINLINE Tc(MIN) =  15.54
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.587
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        3.20      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.56      0.61      1.00    66
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        1.58      0.75      0.40    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.74      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.08      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.73
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
  SUBAREA AREA(ACRES) =    8.16      SUBAREA RUNOFF(CFS) =   15.60
  EFFECTIVE AREA(ACRES) =     27.32   AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     27.32       PEAK FLOW RATE(CFS) =      50.12

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020623.0 TO NODE LR020624.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2145.00  DOWNSTREAM(FEET) =   2140.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   251.47   CHANNEL SLOPE =  0.0199
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  35.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     50.12
  FLOW VELOCITY(FEET/SEC.) =   2.44   FLOW DEPTH(FEET) =   0.77
  TRAVEL TIME(MIN.) =   1.72   Tc(MIN.) =  17.25
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20624.00 =  1632.76 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020624.0 TO NODE LR020624.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.25
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.429
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        4.38      0.75      0.40    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.30      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.08      0.75      0.90    56
  CONDOMINIUMS               B        0.14      0.75      0.35    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
```

```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.55
  SUBAREA AREA(ACRES) =   10.90      SUBAREA RUNOFF(CFS) =   19.82
  EFFECTIVE AREA(ACRES) =     38.22   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.75
  TOTAL AREA(ACRES) =     38.22       PEAK FLOW RATE(CFS) =      66.06

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020624.0 TO NODE LR020625.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2140.00  DOWNSTREAM(FEET) =   2130.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   332.21   CHANNEL SLOPE =  0.0301
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  35.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     66.06
  FLOW VELOCITY(FEET/SEC.) =   3.08   FLOW DEPTH(FEET) =   0.78
  TRAVEL TIME(MIN.) =   1.80   Tc(MIN.) =  19.05
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20625.00 =  1964.97 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020625.0 TO NODE LR020625.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  19.05
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.289
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.47      0.75      0.60    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.16      0.75      0.40    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.59
  SUBAREA AREA(ACRES) =    5.63      SUBAREA RUNOFF(CFS) =    9.34
  EFFECTIVE AREA(ACRES) =     43.85   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =     43.85       PEAK FLOW RATE(CFS) =      70.58

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020625.0 TO NODE LR020626.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2130.00  DOWNSTREAM ELEVATION(FEET) = 2116.00
  STREET LENGTH(FEET) =   342.35   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00
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  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.74

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      74.67
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.59
    HALFSTREET FLOOD WIDTH(FEET) =   22.35
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.97
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.09
  STREET FLOW TRAVEL TIME(MIN.) =   0.82   Tc(MIN.) =  19.87
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.232
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.09      0.75      0.40    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.68      0.75      0.60    56
  MOBILE HOME PARK           B        0.24      0.75      0.25    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.04      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.58
  SUBAREA AREA(ACRES) =    5.05      SUBAREA RUNOFF(CFS) =    8.16
  EFFECTIVE AREA(ACRES) =     48.90    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.69  AREA-AVERAGED Ap =  0.72
  TOTAL AREA(ACRES) =     48.90       PEAK FLOW RATE(CFS) =      76.49

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.59   HALFSTREET FLOOD WIDTH(FEET) =  22.59
  FLOW VELOCITY(FEET/SEC.) =  6.99   DEPTH*VELOCITY(FT*FT/SEC.) =   4.14
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20626.00 =  2307.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020626.0 TO NODE LR020627.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2116.00  DOWNSTREAM ELEVATION(FEET) = 2110.00
  STREET LENGTH(FEET) =   424.67   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
```

```
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      79.57
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.70
    HALFSTREET FLOOD WIDTH(FEET) =   28.09
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.82
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.38
  STREET FLOW TRAVEL TIME(MIN.) =   1.47   Tc(MIN.) =  21.34
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.138
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.03      0.75      0.40    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.50      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.53      0.75      0.90    56
  MOBILE HOME PARK           B        0.07      0.75      0.25    56
  COMMERCIAL                 B        0.09      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    4.22      SUBAREA RUNOFF(CFS) =    6.16
  EFFECTIVE AREA(ACRES) =     53.12    AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.69  AREA-AVERAGED Ap =  0.72
  TOTAL AREA(ACRES) =     53.12        PEAK FLOW RATE(CFS) =      78.54

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.70   HALFSTREET FLOOD WIDTH(FEET) =  27.90
  FLOW VELOCITY(FEET/SEC.) =  4.82   DEPTH*VELOCITY(FT*FT/SEC.) =   3.36
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20627.00 =  2731.99 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020627.0 TO NODE LR020628.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2110.00  DOWNSTREAM ELEVATION(FEET) = 2108.00
  STREET LENGTH(FEET) =   486.92   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
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  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      82.67
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.87
    HALFSTREET FLOOD WIDTH(FEET) =   36.33
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.05
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.64
  STREET FLOW TRAVEL TIME(MIN.) =   2.66   Tc(MIN.) =  24.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.993
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        1.07      0.75      0.40    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.66      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.65      0.75      0.60    56
  COMMERCIAL                 B        0.68      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.64
  SUBAREA AREA(ACRES) =    6.06      SUBAREA RUNOFF(CFS) =    8.26
  EFFECTIVE AREA(ACRES) =     59.18    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.71
  TOTAL AREA(ACRES) =     59.18        PEAK FLOW RATE(CFS) =      79.83

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.86   HALFSTREET FLOOD WIDTH(FEET) =  35.78
  FLOW VELOCITY(FEET/SEC.) =  3.03   DEPTH*VELOCITY(FT*FT/SEC.) =   2.59
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  486.9 FT WITH ELEVATION-DROP =   2.0 FT, IS   14.9 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20628.00
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20628.00 =  3218.91 FEET.

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  FLOW PROCESS FROM NODE LR020628.0 TO NODE LR020629.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2108.00  DOWNSTREAM ELEVATION(FEET) = 2103.00
  STREET LENGTH(FEET) =   256.63   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
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 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      83.44
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.68
   HALFSTREET FLOOD WIDTH(FEET) =   26.86
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.50
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.73
 STREET FLOW TRAVEL TIME(MIN.) =   0.78   Tc(MIN.) =  24.78
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.955
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"      B        0.98      0.75      0.40    56
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        0.92      0.75      0.90    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        3.13      0.75      0.60    56
 COMMERCIAL                 B        0.27      0.75      0.10    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.59
 SUBAREA AREA(ACRES) =    5.30      SUBAREA RUNOFF(CFS) =    7.22
 EFFECTIVE AREA(ACRES) =     64.48    AREA-AVERAGED Fm(INCH/HR) =  0.49
 AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.70
 TOTAL AREA(ACRES) =     64.48        PEAK FLOW RATE(CFS) =      85.05

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.68   HALFSTREET FLOOD WIDTH(FEET) =  27.05
 FLOW VELOCITY(FEET/SEC.) =  5.54   DEPTH*VELOCITY(FT*FT/SEC.) =   3.77
 LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20629.00 =  3475.54 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020629.0 TO NODE LR020630.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2103.00  DOWNSTREAM ELEVATION(FEET) = 2097.00
 STREET LENGTH(FEET) =   278.26   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.89

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      91.02
   ***STREET FLOWING FULL***
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   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.68
   HALFSTREET FLOOD WIDTH(FEET) =   27.23
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.85
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.00
 STREET FLOW TRAVEL TIME(MIN.) =   0.79   Tc(MIN.) =  25.57
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.918
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 CONDOMINIUMS               B        2.76      0.75      0.35    56
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"      B        0.90      0.75      0.40    56
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        1.30      0.75      0.90    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.80      0.75      0.60    56
 COMMERCIAL                 B        1.62      0.75      0.10    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.45
 SUBAREA AREA(ACRES) =    8.38      SUBAREA RUNOFF(CFS) =   11.95
 EFFECTIVE AREA(ACRES) =     72.86    AREA-AVERAGED Fm(INCH/HR) =  0.47
 AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.67
 TOTAL AREA(ACRES) =     72.86        PEAK FLOW RATE(CFS) =      94.87

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.69   HALFSTREET FLOOD WIDTH(FEET) =  27.66
 FLOW VELOCITY(FEET/SEC.) =  5.92   DEPTH*VELOCITY(FT*FT/SEC.) =   4.10
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  278.3 FT WITH ELEVATION-DROP =   6.0 FT, IS   31.3 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20630.00
 LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20630.00 =  3753.80 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020630.0 TO NODE LR020631.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2097.00  DOWNSTREAM ELEVATION(FEET) = 2088.00
 STREET LENGTH(FEET) =   362.66   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.85

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     101.35
   ***STREET FLOWING FULL***
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  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.69
  HALFSTREET FLOOD WIDTH(FEET) =   27.66
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.32
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.38
 STREET FLOW TRAVEL TIME(MIN.) =   0.96   Tc(MIN.) =  26.53
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.877
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"      B        1.22      0.75      0.40    56
 CONDOMINIUMS               B        3.44      0.75      0.35    56
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        0.22      0.75      0.90    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        2.91      0.75      0.60    56
 COMMERCIAL                 B        1.38      0.75      0.10    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.41
 SUBAREA AREA(ACRES) =    9.17      SUBAREA RUNOFF(CFS) =   12.95
 EFFECTIVE AREA(ACRES) =     82.03    AREA-AVERAGED Fm(INCH/HR) =  0.45
 AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.64
 TOTAL AREA(ACRES) =     82.03        PEAK FLOW RATE(CFS) =     105.08

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.70   HALFSTREET FLOOD WIDTH(FEET) =  28.02
 FLOW VELOCITY(FEET/SEC.) =  6.39   DEPTH*VELOCITY(FT*FT/SEC.) =   4.48
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  362.7 FT WITH ELEVATION-DROP =   9.0 FT, IS   32.7 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20631.00
 LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20631.00 =  4116.46 FEET.

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 FLOW PROCESS FROM NODE LR020631.0 TO NODE LR020632.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2088.00  DOWNSTREAM ELEVATION(FEET) = 2080.00
 STREET LENGTH(FEET) =   271.89   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.81

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     109.79
   ***STREET FLOWING FULL***
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  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.69
  HALFSTREET FLOOD WIDTH(FEET) =   27.60
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.88
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.76
 STREET FLOW TRAVEL TIME(MIN.) =   0.66   Tc(MIN.) =  27.19
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.849
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"      B        0.65      0.75      0.40    56
 CONDOMINIUMS               B        1.64      0.75      0.35    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        3.35      0.75      0.60    56
 COMMERCIAL                 B        1.11      0.75      0.10    56
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        0.16      0.75      0.90    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.45
 SUBAREA AREA(ACRES) =    6.91      SUBAREA RUNOFF(CFS) =    9.41
 EFFECTIVE AREA(ACRES) =     88.94    AREA-AVERAGED Fm(INCH/HR) =  0.44
 AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.63
 TOTAL AREA(ACRES) =     88.94        PEAK FLOW RATE(CFS) =     112.47

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.70   HALFSTREET FLOOD WIDTH(FEET) =  27.84
 FLOW VELOCITY(FEET/SEC.) =  6.93   DEPTH*VELOCITY(FT*FT/SEC.) =   4.83
 LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20632.00 =  4388.35 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020632.0 TO NODE LR020633.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2080.00  DOWNSTREAM ELEVATION(FEET) = 2074.00
 STREET LENGTH(FEET) =   252.32   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.86

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     129.26
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.75
   HALFSTREET FLOOD WIDTH(FEET) =   30.65
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    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.62
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.99
  STREET FLOW TRAVEL TIME(MIN.) =   0.63   Tc(MIN.) =  27.82
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.824
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        4.07      0.75      0.40    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.86      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       20.53      0.75      0.90    56
  COMMERCIAL                 B        1.08      0.75      0.10    56
  MOBILE HOME PARK           B        0.18      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.76
  SUBAREA AREA(ACRES) =   29.72      SUBAREA RUNOFF(CFS) =   33.58
  EFFECTIVE AREA(ACRES) =    118.66    AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.66
  TOTAL AREA(ACRES) =    118.66        PEAK FLOW RATE(CFS) =     144.02

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.78   HALFSTREET FLOOD WIDTH(FEET) =  31.93
  FLOW VELOCITY(FEET/SEC.) =  6.82   DEPTH*VELOCITY(FT*FT/SEC.) =   5.31
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  252.3 FT WITH ELEVATION-DROP =   6.0 FT, IS  108.9 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20633.00
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20633.00 =  4640.67 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020633.0 TO NODE LR020644.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2074.00  DOWNSTREAM ELEVATION(FEET) = 2068.00
  STREET LENGTH(FEET) =   104.43   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.67

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     144.50
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.68
    HALFSTREET FLOOD WIDTH(FEET) =   26.93
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    AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.49
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.44
  STREET FLOW TRAVEL TIME(MIN.) =   0.18   Tc(MIN.) =  28.01
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.817
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.22      0.75      0.40    56
  COMMERCIAL                 B        0.35      0.75      0.10    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.11      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.33
  SUBAREA AREA(ACRES) =    0.68      SUBAREA RUNOFF(CFS) =    0.96
  EFFECTIVE AREA(ACRES) =    119.34    AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.66
  TOTAL AREA(ACRES) =    119.34        PEAK FLOW RATE(CFS) =     144.21

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.68   HALFSTREET FLOOD WIDTH(FEET) =  26.93
  FLOW VELOCITY(FEET/SEC.) =  9.47   DEPTH*VELOCITY(FT*FT/SEC.) =   6.42

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.67
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.90
  PIPE-FLOW(CFS) =     49.99
  PIPEFLOW TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =  27.93
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.819
  SUBAREA AREA(ACRES) =    0.68      SUBAREA RUNOFF(CFS) =    0.96
  TOTAL AREA(ACRES) =    119.34        PEAK FLOW RATE(CFS) =    144.52

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   94.53
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.60
    HALFSTREET FLOOD WIDTH(FEET) =   22.96
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.39
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.02
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20644.00 =  4745.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020644.0 TO NODE LR020644.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
```

```
  TIME OF CONCENTRATION(MIN.) =  27.93
  RAINFALL INTENSITY(INCH/HR) =   1.82
  AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.72
  AREA-AVERAGED Ap =  0.66
  EFFECTIVE STREAM AREA(ACRES) =   119.34
  TOTAL STREAM AREA(ACRES) =   119.34
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    144.52

****************************************************************************
  FLOW PROCESS FROM NODE LR020640.0 TO NODE LR020641.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1072.64
  ELEVATION DATA: UPSTREAM(FEET) =   2182.00  DOWNSTREAM(FEET) =   2120.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.781
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.221
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        7.20      0.75      0.40    56   10.78
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.52      0.61      1.00    66   20.35
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.56
  SUBAREA RUNOFF(CFS) =     24.85
  TOTAL AREA(ACRES) =      9.72   PEAK FLOW RATE(CFS) =     24.85

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020641.0 TO NODE LR020642.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2120.00  DOWNSTREAM ELEVATION(FEET) = 2119.00
  STREET LENGTH(FEET) =   375.42   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      26.79
    ***STREET FLOWING FULL***
```



```
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.65
    HALFSTREET FLOOD WIDTH(FEET) =   25.46
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.96
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.27
  STREET FLOW TRAVEL TIME(MIN.) =   3.20   Tc(MIN.) =  13.98
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.756
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.12      0.61      1.00    66
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.78      0.75      0.40    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.64
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.75
  SUBAREA AREA(ACRES) =    1.90      SUBAREA RUNOFF(CFS) =    3.88
  EFFECTIVE AREA(ACRES) =     11.62    AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.59
  TOTAL AREA(ACRES) =     11.62        PEAK FLOW RATE(CFS) =      24.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.63   HALFSTREET FLOOD WIDTH(FEET) =  24.73
  FLOW VELOCITY(FEET/SEC.) =  1.92   DEPTH*VELOCITY(FT*FT/SEC.) =   1.22
  LONGEST FLOWPATH FROM NODE  20640.00 TO NODE  20642.00 =  1448.06 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020642.0 TO NODE LR020643.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2119.00  DOWNSTREAM ELEVATION(FEET) = 2100.00
  STREET LENGTH(FEET) =   635.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.81

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      28.82
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.48
    HALFSTREET FLOOD WIDTH(FEET) =   17.57
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.50
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.15
  STREET FLOW TRAVEL TIME(MIN.) =   2.35   Tc(MIN.) =  16.33
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.510
```

```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        3.99      0.75      0.40    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
  SUBAREA AREA(ACRES) =    3.99      SUBAREA RUNOFF(CFS) =    7.94
  EFFECTIVE AREA(ACRES) =     15.61    AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.69  AREA-AVERAGED Ap =  0.54
  TOTAL AREA(ACRES) =     15.61        PEAK FLOW RATE(CFS) =      30.03

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.48   HALFSTREET FLOOD WIDTH(FEET) =  17.80
  FLOW VELOCITY(FEET/SEC.) =  4.57   DEPTH*VELOCITY(FT*FT/SEC.) =   2.20
  LONGEST FLOWPATH FROM NODE  20640.00 TO NODE  20643.00 =  2083.06 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020643.0 TO NODE LR020644.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  2100.00
  DOWNSTREAM NODE ELEVATION(FEET) =  2068.00
  FLOW LENGTH(FEET) =   663.17   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  10.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.83
  PIPE-FLOW(CFS) =     30.03
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.70    Tc(MIN.) =  17.03
  LONGEST FLOWPATH FROM NODE  20640.00 TO NODE  20644.00 =  2746.23 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020644.0 TO NODE LR020644.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.03
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.448
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        1.89      0.75      0.40    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.02      0.75      0.60    56
  COMMERCIAL                 B        0.11      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.39
  SUBAREA AREA(ACRES) =    2.02      SUBAREA RUNOFF(CFS) =    3.93
  EFFECTIVE AREA(ACRES) =     17.63   AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.52
```



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  TOTAL AREA(ACRES) =     17.63       PEAK FLOW RATE(CFS) =      33.08

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020644.0 TO NODE LR020644.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  17.03
  RAINFALL INTENSITY(INCH/HR) =   2.45
  AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.70
  AREA-AVERAGED Ap =  0.52
  EFFECTIVE STREAM AREA(ACRES) =    17.63
  TOTAL STREAM AREA(ACRES) =    17.63
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     33.08

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    144.52  27.93    1.819  0.72( 0.47) 0.66   119.3 LR020620.0
      2     33.08  17.03    2.448  0.70( 0.36) 0.52    17.6 LR020640.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    162.38  17.03    2.448  0.72( 0.45) 0.63    90.4 LR020640.0
      2    167.63  27.93    1.819  0.72( 0.46) 0.64   137.0 LR020620.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    167.63    Tc(MIN.) =    27.93
  EFFECTIVE AREA(ACRES) =   136.97   AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.64
  TOTAL AREA(ACRES) =    136.97
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20644.00 =  4745.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020644.0 TO NODE LR020645.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2068.00  DOWNSTREAM ELEVATION(FEET) = 2059.00
  STREET LENGTH(FEET) =   221.04   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
```

```
SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.74

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     179.27
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.77
  HALFSTREET FLOOD WIDTH(FEET) =   31.32
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.81
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.75
STREET FLOW TRAVEL TIME(MIN.) =   0.42   Tc(MIN.) =  28.35
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.803
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"8-10 DWELLINGS/ACRE"      B        0.33      0.75      0.40    56
COMMERCIAL                 B        2.57      0.75      0.10    56
RESIDENTIAL
".4 DWELLING/ACRE"         B        6.71      0.75      0.90    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        9.85      0.75      0.60    56
MOBILE HOME PARK           B        0.01      0.75      0.25    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
SUBAREA AREA(ACRES) =   19.47      SUBAREA RUNOFF(CFS) =   23.29
EFFECTIVE AREA(ACRES) =    156.44    AREA-AVERAGED Fm(INCH/HR) =  0.46
AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.64
TOTAL AREA(ACRES) =    156.44        PEAK FLOW RATE(CFS) =     188.93

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.78   HALFSTREET FLOOD WIDTH(FEET) =  31.99
FLOW VELOCITY(FEET/SEC.) =  8.91   DEPTH*VELOCITY(FT*FT/SEC.) =   6.95

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.74
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  16.55
PIPE-FLOW(CFS) =     98.39
PIPEFLOW TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =  28.15
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.811
SUBAREA AREA(ACRES) =   19.47      SUBAREA RUNOFF(CFS) =   23.42
TOTAL AREA(ACRES) =    156.44        PEAK FLOW RATE(CFS) =    189.99

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   91.60
  ***STREET FLOWING FULL***
```



```
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.62
  HALFSTREET FLOOD WIDTH(FEET) =   24.18
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.37
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.60

** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
    1    195.09  17.26    2.429  0.72( 0.46) 0.63   109.9 LR020640.0
    2    189.99  28.15    1.811  0.72( 0.46) 0.64   156.4 LR020620.0
NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) =    195.09  Tc(MIN.) =  17.26
AREA-AVERAGED Fm(INCH/HR) =  0.46  AREA-AVERAGED Fp(INCH/HR) =  0.72
AREA-AVERAGED Ap =  0.63  EFFECTIVE AREA(ACRES) =    109.87
LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20645.00 =  4966.14 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020645.0 TO NODE LR020646.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2059.00  DOWNSTREAM ELEVATION(FEET) = 2046.00
  STREET LENGTH(FEET) =   302.67   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.73

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     210.47
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.80
    HALFSTREET FLOOD WIDTH(FEET) =   33.03
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.33
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.47
  STREET FLOW TRAVEL TIME(MIN.) =   0.54   Tc(MIN.) =  17.80
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.384
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        9.08      0.75      0.40    56
  COMMERCIAL                 B        5.79      0.75      0.10    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.74      0.75      0.50    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.22      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.30
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  SUBAREA AREA(ACRES) =   15.83      SUBAREA RUNOFF(CFS) =   30.75
  EFFECTIVE AREA(ACRES) =    125.70    AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =    172.27        PEAK FLOW RATE(CFS) =     201.59

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.79   HALFSTREET FLOOD WIDTH(FEET) =  32.48
  FLOW VELOCITY(FEET/SEC.) =  9.23   DEPTH*VELOCITY(FT*FT/SEC.) =   7.29

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.73
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.00
  PIPE-FLOW(CFS) =    101.05
  PIPEFLOW TRAVEL TIME(MIN.) =   0.30    Tc(MIN.) =  17.55
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.404
  SUBAREA AREA(ACRES) =   15.83      SUBAREA RUNOFF(CFS) =   31.04
  TOTAL AREA(ACRES) =    172.27        PEAK FLOW RATE(CFS) =    203.83

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  102.78
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.64
    HALFSTREET FLOOD WIDTH(FEET) =   25.03
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.75
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.96

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    223.69  17.55    2.404  0.72( 0.43) 0.59   125.7 LR020640.0
      2    210.81  28.45    1.799  0.72( 0.44) 0.61   172.3 LR020620.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    223.69  Tc(MIN.) =  17.55
  AREA-AVERAGED Fm(INCH/HR) =  0.43  AREA-AVERAGED Fp(INCH/HR) =  0.72
  AREA-AVERAGED Ap =  0.59  EFFECTIVE AREA(ACRES) =    125.70
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20646.00 =  5268.81 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020646.0 TO NODE LR020647.0 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2046.00  DOWNSTREAM(FEET) =  2030.00
  FLOW LENGTH(FEET) =   325.06   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  33.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  25.36
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
```



```
  PIPE-FLOW(CFS) =    223.69
  PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =  17.77
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20647.00 =  5593.87 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020647.0 TO NODE LR020647.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.77
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.387
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK            B       20.06      0.75       0.25    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"          B       29.79      0.75       0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B       14.97      0.75       0.60    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"       B       13.31      0.75       0.40    56
  COMMERCIAL                  B       16.98      0.75       0.10    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"        B       17.61      0.75       0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =  112.72      SUBAREA RUNOFF(CFS) =  204.02
  EFFECTIVE AREA(ACRES) =    238.42   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    284.99       PEAK FLOW RATE(CFS) =     405.88

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    425.74  17.77    2.387  0.73( 0.40) 0.55   238.4 LR020640.0
      2    353.14  28.67    1.791  0.73( 0.41) 0.57   285.0 LR020620.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    425.74  Tc(MIN.) =  17.77
  AREA-AVERAGED Fm(INCH/HR) =  0.40  AREA-AVERAGED Fp(INCH/HR) =  0.73
  AREA-AVERAGED Ap =  0.55  EFFECTIVE AREA(ACRES) =    238.42

****************************************************************************
  FLOW PROCESS FROM NODE LR020647.0 TO NODE LR020648.0 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2030.00  DOWNSTREAM(FEET) =  2025.00
  FLOW LENGTH(FEET) =   149.90   MANNING'S N =  0.013
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  47.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  25.45
  ESTIMATED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    425.74
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =  17.86
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20648.00 =  5743.77 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR020648.0 TO NODE LR020648.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.86
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.379
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.31      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =    0.31      SUBAREA RUNOFF(CFS) =    0.56
  EFFECTIVE AREA(ACRES) =    238.73   AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.55
  TOTAL AREA(ACRES) =    285.30       PEAK FLOW RATE(CFS) =     425.74
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020648.0 TO NODE LR020648.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    425.74  17.86    2.379  0.73( 0.40) 0.55   238.7 LR020640.0
      2    353.14  28.77    1.787  0.73( 0.41) 0.57   285.3 LR020620.0
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20648.00 =  5743.77 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    205.75  23.47    2.019  0.75( 0.44) 0.58   144.5 LR020600.0
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20648.00 =  5640.07 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    617.89  17.86    2.379  0.74( 0.41) 0.56   348.7 LR020640.0
      2    594.14  23.47    2.019  0.74( 0.42) 0.57   407.1 LR020600.0
      3    528.72  28.77    1.787  0.74( 0.42) 0.57   429.8 LR020620.0
    TOTAL AREA(ACRES) =    429.76

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      617.89  Tc(MIN.) =   17.864
  EFFECTIVE AREA(ACRES) =    348.67  AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.56
  TOTAL AREA(ACRES) =    429.76
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20648.00 =  5743.77 FEET.
```



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****************************************************************************
  FLOW PROCESS FROM NODE LR020648.0 TO NODE LR020648.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020648.0 TO NODE LR020655.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2025.00  DOWNSTREAM ELEVATION(FEET) = 2020.00
  STREET LENGTH(FEET) =   623.73   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     623.97
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.56
    HALFSTREET FLOOD WIDTH(FEET) =   70.81
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.18
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    9.61
  STREET FLOW TRAVEL TIME(MIN.) =   1.68   Tc(MIN.) =  19.55
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.254
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        2.58      0.75      0.50    56
  COMMERCIAL                 B        3.03      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.11      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.00      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.08      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.36
  SUBAREA AREA(ACRES) =    6.80      SUBAREA RUNOFF(CFS) =   12.16
  EFFECTIVE AREA(ACRES) =    355.47    AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.56
  TOTAL AREA(ACRES) =    436.56       PEAK FLOW RATE(CFS) =     617.89
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50
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  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.55   HALFSTREET FLOOD WIDTH(FEET) =  70.50
  FLOW VELOCITY(FEET/SEC.) =  6.17   DEPTH*VELOCITY(FT*FT/SEC.) =   9.56

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  87.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.02
  PIPE-FLOW(CFS) =    579.24
  PIPEFLOW TRAVEL TIME(MIN.) =   0.74    Tc(MIN.) =  18.61
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.322
  SUBAREA AREA(ACRES) =    6.80      SUBAREA RUNOFF(CFS) =   12.58
  TOTAL AREA(ACRES) =    436.56        PEAK FLOW RATE(CFS) =    617.89
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   38.66
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.62
    HALFSTREET FLOOD WIDTH(FEET) =   23.75
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.22
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.98
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20655.00 =  6367.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020655.0 TO NODE LR020655.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  18.61
  RAINFALL INTENSITY(INCH/HR) =   2.32
  AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.74
  AREA-AVERAGED Ap =  0.56
  EFFECTIVE STREAM AREA(ACRES) =   355.47
  TOTAL STREAM AREA(ACRES) =   436.56
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    617.89

****************************************************************************
  FLOW PROCESS FROM NODE LR020649.0 TO NODE LR020650.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   545.44
  ELEVATION DATA: UPSTREAM(FEET) =   2195.00  DOWNSTREAM(FEET) =   2170.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.492
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.477
```



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  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.54      0.75      0.70    56   10.09
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.61      0.75      0.60    56    9.49
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA RUNOFF(CFS) =     19.11
  TOTAL AREA(ACRES) =      7.15   PEAK FLOW RATE(CFS) =     19.11

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.36; 6HR = 1.90; 24HR = 4.00

****************************************************************************
  FLOW PROCESS FROM NODE LR020650.0 TO NODE LR020651.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2170.00  DOWNSTREAM ELEVATION(FEET) = 2130.00
  STREET LENGTH(FEET) =   374.60   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.56

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      30.14
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.40
    HALFSTREET FLOOD WIDTH(FEET) =   13.90
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.35
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.97
  STREET FLOW TRAVEL TIME(MIN.) =   0.85   Tc(MIN.) =  10.34
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.303
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        7.90      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.89      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    8.79      SUBAREA RUNOFF(CFS) =   22.04
  EFFECTIVE AREA(ACRES) =     15.94    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     15.94        PEAK FLOW RATE(CFS) =      40.03

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
```

```
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.36; 6HR = 1.90; 24HR = 4.00

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.44   HALFSTREET FLOOD WIDTH(FEET) =  15.54
  FLOW VELOCITY(FEET/SEC.) =  7.90   DEPTH*VELOCITY(FT*FT/SEC.) =   3.45
  LONGEST FLOWPATH FROM NODE  20649.00 TO NODE  20651.00 =   920.04 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020651.0 TO NODE LR020652.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2130.00  DOWNSTREAM ELEVATION(FEET) = 2080.00
  STREET LENGTH(FEET) =   427.12   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.56

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      49.04
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.46
    HALFSTREET FLOOD WIDTH(FEET) =   16.55
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.58
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.92
  STREET FLOW TRAVEL TIME(MIN.) =   0.83   Tc(MIN.) =  11.17
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.153
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.22      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.35      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    7.57      SUBAREA RUNOFF(CFS) =   18.01
  EFFECTIVE AREA(ACRES) =     23.51    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     23.51        PEAK FLOW RATE(CFS) =      55.90

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.47   HALFSTREET FLOOD WIDTH(FEET) =  17.41
  FLOW VELOCITY(FEET/SEC.) =  8.87   DEPTH*VELOCITY(FT*FT/SEC.) =   4.21
  LONGEST FLOWPATH FROM NODE  20649.00 TO NODE  20652.00 =  1347.16 FEET.

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  FLOW PROCESS FROM NODE LR020652.0 TO NODE LR020653.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2080.00  DOWNSTREAM ELEVATION(FEET) = 2040.00
  STREET LENGTH(FEET) =   432.48   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.60

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      60.79
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.50
    HALFSTREET FLOOD WIDTH(FEET) =   18.01
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.42
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.21
  STREET FLOW TRAVEL TIME(MIN.) =   0.86   Tc(MIN.) =  12.03
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.016
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        3.90      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.45      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    4.35      SUBAREA RUNOFF(CFS) =    9.79
  EFFECTIVE AREA(ACRES) =     27.86    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     27.86        PEAK FLOW RATE(CFS) =      62.79

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.50   HALFSTREET FLOOD WIDTH(FEET) =  18.20
  FLOW VELOCITY(FEET/SEC.) =  8.54   DEPTH*VELOCITY(FT*FT/SEC.) =   4.30
  LONGEST FLOWPATH FROM NODE  20649.00 TO NODE  20653.00 =  1779.64 FEET.

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  FLOW PROCESS FROM NODE LR020653.0 TO NODE LR020654.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2040.00  DOWNSTREAM ELEVATION(FEET) = 2030.00
  STREET LENGTH(FEET) =   283.32   CURB HEIGHT(INCHES) =  6.0
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  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.77

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      65.45
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.58
    HALFSTREET FLOOD WIDTH(FEET) =   21.92
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.33
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.66
  STREET FLOW TRAVEL TIME(MIN.) =   0.75   Tc(MIN.) =  12.77
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.909
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.22      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.46      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.74      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
  SUBAREA AREA(ACRES) =    2.42      SUBAREA RUNOFF(CFS) =    5.32
  EFFECTIVE AREA(ACRES) =     30.28    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     30.28        PEAK FLOW RATE(CFS) =      65.43

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.58   HALFSTREET FLOOD WIDTH(FEET) =  21.92
  FLOW VELOCITY(FEET/SEC.) =  6.33   DEPTH*VELOCITY(FT*FT/SEC.) =   3.66
  LONGEST FLOWPATH FROM NODE  20649.00 TO NODE  20654.00 =  2062.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020654.0 TO NODE LR020655.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2030.00  DOWNSTREAM ELEVATION(FEET) = 2020.00
  STREET LENGTH(FEET) =   164.56   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
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  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.66

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      65.94
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.54
    HALFSTREET FLOOD WIDTH(FEET) =   19.91
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.62
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.10
  STREET FLOW TRAVEL TIME(MIN.) =   0.36   Tc(MIN.) =  13.13
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.861
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.41      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
  SUBAREA AREA(ACRES) =    0.41      SUBAREA RUNOFF(CFS) =    1.03
  EFFECTIVE AREA(ACRES) =     30.69    AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.67
  TOTAL AREA(ACRES) =     30.69        PEAK FLOW RATE(CFS) =      65.43
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.54   HALFSTREET FLOOD WIDTH(FEET) =  19.85
  FLOW VELOCITY(FEET/SEC.) =  7.60   DEPTH*VELOCITY(FT*FT/SEC.) =   4.08
  LONGEST FLOWPATH FROM NODE  20649.00 TO NODE  20655.00 =  2227.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020655.0 TO NODE LR020655.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  13.13
  RAINFALL INTENSITY(INCH/HR) =   2.86
  AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.67
  EFFECTIVE STREAM AREA(ACRES) =    30.69
  TOTAL STREAM AREA(ACRES) =    30.69
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     65.43

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    617.89  18.61    2.322  0.74( 0.41) 0.56   355.5 LR020640.0
      1    594.14  24.22    1.982  0.74( 0.42) 0.56   413.9 LR020600.0
      1    528.72  29.42    1.764  0.74( 0.42) 0.57   436.6 LR020620.0
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```
    2     65.43  13.13    2.861  0.75( 0.50) 0.67    30.7 LR020649.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    624.75  13.13    2.861  0.74( 0.42) 0.57   281.6 LR020649.0
      2    668.35  18.61    2.322  0.74( 0.42) 0.57   386.2 LR020640.0
      3    635.17  24.22    1.982  0.74( 0.42) 0.57   444.6 LR020600.0
      4    563.70  29.42    1.764  0.74( 0.43) 0.58   467.2 LR020620.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    668.35    Tc(MIN.) =    18.61
  EFFECTIVE AREA(ACRES) =   386.16   AREA-AVERAGED Fm(INCH/HR) =  0.42
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.57
  TOTAL AREA(ACRES) =    467.25
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20655.00 =  6367.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020655.0 TO NODE LR020656.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2020.00  DOWNSTREAM ELEVATION(FEET) = 2014.00
  STREET LENGTH(FEET) =   238.44   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.85

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     671.51
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.30
    HALFSTREET FLOOD WIDTH(FEET) =   58.18
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.81
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   12.79
  STREET FLOW TRAVEL TIME(MIN.) =   0.40   Tc(MIN.) =  19.01
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.292
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.66      0.75      0.50    56
  COMMERCIAL                 B        1.28      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.16      0.75      0.60    56
  RESIDENTIAL
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  "2 DWELLINGS/ACRE"         B        1.49      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.44
  SUBAREA AREA(ACRES) =    3.59      SUBAREA RUNOFF(CFS) =    6.33
  EFFECTIVE AREA(ACRES) =    389.75    AREA-AVERAGED Fm(INCH/HR) =  0.42
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.56
  TOTAL AREA(ACRES) =    470.84        PEAK FLOW RATE(CFS) =     668.35
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.30   HALFSTREET FLOOD WIDTH(FEET) =  58.05
  FLOW VELOCITY(FEET/SEC.) =  9.81   DEPTH*VELOCITY(FT*FT/SEC.) =  12.76

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.85
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  72.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  21.89
  PIPE-FLOW(CFS) =    619.53
  PIPEFLOW TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =  18.79
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.308
  SUBAREA AREA(ACRES) =    3.59      SUBAREA RUNOFF(CFS) =    6.38
  TOTAL AREA(ACRES) =    470.84        PEAK FLOW RATE(CFS) =    668.35
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   48.82
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.56
    HALFSTREET FLOOD WIDTH(FEET) =   20.94
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.14
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.87
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20656.00 =  6605.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020656.0 TO NODE LR020657.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2014.00  DOWNSTREAM ELEVATION(FEET) = 2004.00
  STREET LENGTH(FEET) =   422.05   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
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Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.86

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     701.90
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  1.34
  HALFSTREET FLOOD WIDTH(FEET) =   59.88
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.69
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   12.96
STREET FLOW TRAVEL TIME(MIN.) =   0.73   Tc(MIN.) =  19.51
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.256
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"5-7 DWELLINGS/ACRE"       B        0.99      0.75      0.50    56
COMMERCIAL                 B        2.55      0.75      0.10    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        3.13      0.75      0.60    56
RESIDENTIAL
"2 DWELLINGS/ACRE"         B       35.47      0.75      0.70    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.65
SUBAREA AREA(ACRES) =   42.14      SUBAREA RUNOFF(CFS) =   67.09
EFFECTIVE AREA(ACRES) =    431.89    AREA-AVERAGED Fm(INCH/HR) =  0.42
AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.57
TOTAL AREA(ACRES) =    512.98        PEAK FLOW RATE(CFS) =     712.15

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.86

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.35   HALFSTREET FLOOD WIDTH(FEET) =  60.25
FLOW VELOCITY(FEET/SEC.) =  9.71   DEPTH*VELOCITY(FT*FT/SEC.) =  13.06

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.86
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  75.00    NUMBER OF PIPES =   1
DEPTH OF FLOW IN  75.0 INCH PIPE IS  61.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  24.90
PIPE-FLOW(CFS) =    668.35
PIPEFLOW TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =  19.07
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.288
SUBAREA AREA(ACRES) =   42.14      SUBAREA RUNOFF(CFS) =   68.28
TOTAL AREA(ACRES) =    512.98        PEAK FLOW RATE(CFS) =    724.33

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.86
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   55.98
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.58
  HALFSTREET FLOOD WIDTH(FEET) =   22.23
```



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  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.28
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.08

** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
    1    699.33  13.60    2.802  0.74( 0.43) 0.58   327.3 LR020649.0
    2    724.33  19.07    2.288  0.74( 0.42) 0.57   431.9 LR020640.0
    3    676.32  24.68    1.960  0.74( 0.43) 0.58   490.4 LR020600.0
    4    608.49  29.87    1.747  0.74( 0.43) 0.58   513.0 LR020620.0
NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) =    724.33  Tc(MIN.) =  19.07
AREA-AVERAGED Fm(INCH/HR) =  0.42  AREA-AVERAGED Fp(INCH/HR) =  0.74
AREA-AVERAGED Ap =  0.57  EFFECTIVE AREA(ACRES) =    431.89
LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20657.00 =  7027.99 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020657.0 TO NODE LR020658.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2004.00  DOWNSTREAM ELEVATION(FEET) = 2000.00
  STREET LENGTH(FEET) =   653.95   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     740.39
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.74
    HALFSTREET FLOOD WIDTH(FEET) =   79.84
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.77
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   10.03
  STREET FLOW TRAVEL TIME(MIN.) =   1.89   Tc(MIN.) =  20.96
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.162
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        1.69      0.75      0.50    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       14.94      0.75      0.70    56
  COMMERCIAL                 B        1.47      0.75      0.10    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.34      0.61      1.00    66
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.78      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
```

```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.65
  SUBAREA AREA(ACRES) =   21.22      SUBAREA RUNOFF(CFS) =   32.12
  EFFECTIVE AREA(ACRES) =    453.11    AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.66
  TOTAL AREA(ACRES) =    534.20        PEAK FLOW RATE(CFS) =     724.33
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.70

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.72   HALFSTREET FLOOD WIDTH(FEET) =  79.17
  FLOW VELOCITY(FEET/SEC.) =  5.74   DEPTH*VELOCITY(FT*FT/SEC.) =   9.90

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) = 102.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN 102.0 INCH PIPE IS  78.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.49
  PIPE-FLOW(CFS) =    724.33
  PIPEFLOW TRAVEL TIME(MIN.) =   0.70    Tc(MIN.) =  19.77
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.238
  SUBAREA AREA(ACRES) =   21.22      SUBAREA RUNOFF(CFS) =   33.58
  TOTAL AREA(ACRES) =    534.20        PEAK FLOW RATE(CFS) =    724.33
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.70

  *NOTE: ESTIMATED PEAK FLOW DEFAULTED TO UPSTREAM PEAK FLOW;
         STREET HYDRAULICS NOT COMPUTED*

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    717.36  14.30    2.718  0.74( 0.43) 0.58   348.6 LR020649.0
      2    738.79  19.77    2.238  0.74( 0.43) 0.58   453.1 LR020640.0
      3    689.36  25.39    1.927  0.74( 0.43) 0.58   511.6 LR020600.0
      4    620.55  30.61    1.722  0.74( 0.43) 0.58   534.2 LR020620.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    738.79  Tc(MIN.) =  19.77
  AREA-AVERAGED Fm(INCH/HR) =  0.43  AREA-AVERAGED Fp(INCH/HR) =  0.74
  AREA-AVERAGED Ap =  0.58  EFFECTIVE AREA(ACRES) =    453.11
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20658.00 =  7681.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020658.0 TO NODE LR020658.0 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20658.dna
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =    534.20  TC(MIN.) =     19.77
  EFFECTIVE AREA(ACRES) =    453.11  AREA-AVERAGED Fm(INCH/HR)=  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.58
```



```
  PEAK FLOW RATE(CFS)   =    738.79
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
******************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                           County of San Bernardino
                         Transportation Flood Control

                          Water Resources Division

------------------------------------------------------------------------------
  FILE NAME: LR0207ZZ.Z13
  TIME/DATE OF STUDY: 16:05 09/15/2004
==============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.1600

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)     (n)
===  =====  ========  =================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
```



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    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


******************************************************************************
  FLOW PROCESS FROM NODE LR020700.0 TO NODE LR020701.0 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   906.02
  ELEVATION DATA: UPSTREAM(FEET) =   2180.00  DOWNSTREAM(FEET) =   2130.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.204
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.175
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        5.30      0.61      1.00    66   19.20
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        4.69      0.75      0.60    56   11.20
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.66
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.81
  SUBAREA RUNOFF(CFS) =     23.72
  TOTAL AREA(ACRES) =      9.99   PEAK FLOW RATE(CFS) =     23.72

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

******************************************************************************
  FLOW PROCESS FROM NODE LR020701.0 TO NODE LR020702.0 IS CODE =  92
------------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
==============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   2130.00
  DOWNSTREAM NODE ELEVATION(FEET) =   2080.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   502.90
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.042
  SUBAREA LOSS RATE DATA(AMC  II):
```

```
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        4.19      0.75      0.60    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        2.38      0.61      1.00    66
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"      B        0.08      0.75      0.40    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.68
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.74
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     31.31
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.16
 AVERAGE FLOW DEPTH(FEET) =   0.53   FLOOD WIDTH(FEET) =   23.98
 "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.82   Tc(MIN.) =  12.03
 SUBAREA AREA(ACRES) =    6.65       SUBAREA RUNOFF(CFS) =   15.18
 EFFECTIVE AREA(ACRES) =   16.64     AREA-AVERAGED Fm(INCH/HR) =   0.52
 AREA-AVERAGED Fp(INCH/HR) =   0.67  AREA-AVERAGED Ap =   0.78
 TOTAL AREA(ACRES) =     16.64         PEAK FLOW RATE(CFS) =      37.71

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

 END OF SUBAREA "V" GUTTER HYDRAULICS:
 DEPTH(FEET) =  0.55   FLOOD WIDTH(FEET) =   26.67
 FLOW VELOCITY(FEET/SEC.) =  10.30   DEPTH*VELOCITY(FT*FT/SEC) =   5.68
 LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20702.00 =  1408.92 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020702.0 TO NODE LR020703.0 IS CODE =  92
----------------------------------------------------------------------------
 >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =   2080.00
 DOWNSTREAM NODE ELEVATION(FEET) =   2075.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   222.67
 "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
 PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
 PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
 MAXIMUM DEPTH(FEET) =   1.00
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.944
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        2.10      0.75      0.60    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        3.64      0.61      1.00    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.65
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.85
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     43.89
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.49
 AVERAGE FLOW DEPTH(FEET) =   0.68   FLOOD WIDTH(FEET) =   41.61
 "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.68   Tc(MIN.) =  12.71
 SUBAREA AREA(ACRES) =    5.74       SUBAREA RUNOFF(CFS) =   12.35
 EFFECTIVE AREA(ACRES) =   22.38     AREA-AVERAGED Fm(INCH/HR) =   0.53
 AREA-AVERAGED Fp(INCH/HR) =   0.66  AREA-AVERAGED Ap =   0.80
 TOTAL AREA(ACRES) =     22.38         PEAK FLOW RATE(CFS) =      48.59
```



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 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

 END OF SUBAREA "V" GUTTER HYDRAULICS:
 DEPTH(FEET) =  0.69   FLOOD WIDTH(FEET) =   43.55
 FLOW VELOCITY(FEET/SEC.) =   5.59   DEPTH*VELOCITY(FT*FT/SEC) =   3.88
 LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20703.00 =  1631.59 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020703.0 TO NODE LR020704.0 IS CODE =  92
----------------------------------------------------------------------------
 >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =   2075.00
 DOWNSTREAM NODE ELEVATION(FEET) =   2070.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   175.13
 "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
 PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
 PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
 MAXIMUM DEPTH(FEET) =   1.00
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.881
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.53      0.61      1.00    66
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"      B        0.24      0.75      0.40    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        2.09      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.71
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.66
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     51.70
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.26
 AVERAGE FLOW DEPTH(FEET) =   0.68   FLOOD WIDTH(FEET) =   42.36
 "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.47   Tc(MIN.) =  13.17
 SUBAREA AREA(ACRES) =    2.86       SUBAREA RUNOFF(CFS) =    6.21
 EFFECTIVE AREA(ACRES) =   25.24     AREA-AVERAGED Fm(INCH/HR) =   0.52
 AREA-AVERAGED Fp(INCH/HR) =   0.67  AREA-AVERAGED Ap =   0.79
 TOTAL AREA(ACRES) =     25.24         PEAK FLOW RATE(CFS) =      53.53

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

 END OF SUBAREA "V" GUTTER HYDRAULICS:
 DEPTH(FEET) =  0.69   FLOOD WIDTH(FEET) =   43.10
 FLOW VELOCITY(FEET/SEC.) =   6.27   DEPTH*VELOCITY(FT*FT/SEC) =   4.33
 LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20704.00 =  1806.72 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020704.0 TO NODE LR020705.0 IS CODE =  92
----------------------------------------------------------------------------
 >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =   2070.00
 DOWNSTREAM NODE ELEVATION(FEET) =   2065.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   236.79
 "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
```

```
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.794
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        4.91      0.75      0.40    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.39      0.75      0.60    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.79      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.72
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.52
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     62.34
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.73
  AVERAGE FLOW DEPTH(FEET) =   0.74   FLOOD WIDTH(FEET) =   49.08
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.69   Tc(MIN.) =  13.86
  SUBAREA AREA(ACRES) =    8.09       SUBAREA RUNOFF(CFS) =   17.62
  EFFECTIVE AREA(ACRES) =   33.33     AREA-AVERAGED Fm(INCH/HR) =   0.49
  AREA-AVERAGED Fp(INCH/HR) =   0.68  AREA-AVERAGED Ap =   0.72
  TOTAL AREA(ACRES) =     33.33         PEAK FLOW RATE(CFS) =      69.19

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.76   FLOOD WIDTH(FEET) =   51.32
  FLOW VELOCITY(FEET/SEC.) =   5.85   DEPTH*VELOCITY(FT*FT/SEC) =   4.45
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20705.00 =  2043.51 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020705.0 TO NODE LR020706.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2065.00  DOWNSTREAM ELEVATION(FEET) = 2060.00
  STREET LENGTH(FEET) =   308.42   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      73.52
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.67
    HALFSTREET FLOOD WIDTH(FEET) =   26.50
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.98
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    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.33
  STREET FLOW TRAVEL TIME(MIN.) =   1.03   Tc(MIN.) =  14.89
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.676
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.14      0.61      1.00    66
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.43      0.75      0.60    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.92      0.75      0.40    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.64
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.84
  SUBAREA AREA(ACRES) =    4.49       SUBAREA RUNOFF(CFS) =    8.66
  EFFECTIVE AREA(ACRES) =     37.82    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =     37.82        PEAK FLOW RATE(CFS) =      74.31

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.67   HALFSTREET FLOOD WIDTH(FEET) =  26.62
  FLOW VELOCITY(FEET/SEC.) =  4.99   DEPTH*VELOCITY(FT*FT/SEC.) =   3.35
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20706.00 =  2351.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020706.0 TO NODE LR020707.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2060.00  DOWNSTREAM ELEVATION(FEET) = 2055.00
  STREET LENGTH(FEET) =   216.66   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      75.12
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.64
    HALFSTREET FLOOD WIDTH(FEET) =   24.97
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.69
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.64
  STREET FLOW TRAVEL TIME(MIN.) =   0.63   Tc(MIN.) =  15.53
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.610
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
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     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.78      0.75      0.40    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
  SUBAREA AREA(ACRES) =    0.78      SUBAREA RUNOFF(CFS) =    1.62
  EFFECTIVE AREA(ACRES) =     38.60    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =     38.60        PEAK FLOW RATE(CFS) =      74.31
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.64   HALFSTREET FLOOD WIDTH(FEET) =  24.85
  FLOW VELOCITY(FEET/SEC.) =  5.68   DEPTH*VELOCITY(FT*FT/SEC.) =   3.62
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20707.00 =  2568.59 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020707.0 TO NODE LR020708.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2055.00  DOWNSTREAM ELEVATION(FEET) = 2040.00
  STREET LENGTH(FEET) =   337.91   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.72

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      80.93
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.59
    HALFSTREET FLOOD WIDTH(FEET) =   22.71
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.32
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.35
  STREET FLOW TRAVEL TIME(MIN.) =   0.77   Tc(MIN.) =  16.30
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.536
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.36      0.61      1.00    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.39      0.75      0.70    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        1.58      0.75      0.40    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.65
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  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.81
  SUBAREA AREA(ACRES) =    7.33      SUBAREA RUNOFF(CFS) =   13.24
  EFFECTIVE AREA(ACRES) =     45.93    AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.74
  TOTAL AREA(ACRES) =     45.93        PEAK FLOW RATE(CFS) =      84.32

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.60   HALFSTREET FLOOD WIDTH(FEET) =  23.08
  FLOW VELOCITY(FEET/SEC.) =  7.41   DEPTH*VELOCITY(FT*FT/SEC.) =   4.46
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20708.00 =  2906.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020708.0 TO NODE LR020709.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2040.00  DOWNSTREAM ELEVATION(FEET) = 2035.00
  STREET LENGTH(FEET) =   377.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      88.43
    ***STREET FLOW SPLITS OVER STREET-CROWN***
    FULL DEPTH(FEET) =    0.94   FLOOD WIDTH(FEET) =   52.58
    FULL HALF-STREET VELOCITY(FEET/SEC.) =    4.76
    SPLIT DEPTH(FEET) =    0.45   SPLIT FLOOD WIDTH(FEET) =   14.65
    SPLIT FLOW(CFS) =    6.41   SPLIT VELOCITY(FEET/SEC.) =    2.74
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.94
    HALFSTREET FLOOD WIDTH(FEET) =   52.58
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.76
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.46
  STREET FLOW TRAVEL TIME(MIN.) =   1.32   Tc(MIN.) =  17.62
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.420
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        0.45      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.33      0.61      1.00    66
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        1.75      0.75      0.40    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        1.06      0.75      0.50    56
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  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
  SUBAREA AREA(ACRES) =    4.59      SUBAREA RUNOFF(CFS) =    8.22
  EFFECTIVE AREA(ACRES) =     50.52    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =     50.52        PEAK FLOW RATE(CFS) =      87.75

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.94   HALFSTREET FLOOD WIDTH(FEET) =  52.58
  FLOW VELOCITY(FEET/SEC.) =  4.76   DEPTH*VELOCITY(FT*FT/SEC.) =   4.46
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20709.00 =  3283.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020709.0 TO NODE LR020710.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2035.00  DOWNSTREAM ELEVATION(FEET) = 2030.00
  STREET LENGTH(FEET) =   326.96   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.06

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      91.13
    ***STREET FLOW SPLITS OVER STREET-CROWN***
    FULL DEPTH(FEET) =    0.94   FLOOD WIDTH(FEET) =   52.58
    FULL HALF-STREET VELOCITY(FEET/SEC.) =    5.11
    SPLIT DEPTH(FEET) =    0.36   SPLIT FLOOD WIDTH(FEET) =   10.33
    SPLIT FLOW(CFS) =    3.06   SPLIT VELOCITY(FEET/SEC.) =    2.43
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.94
    HALFSTREET FLOOD WIDTH(FEET) =   52.58
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.11
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.79
  STREET FLOW TRAVEL TIME(MIN.) =   1.07   Tc(MIN.) =  18.68
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.336
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        0.82      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.94      0.61      1.00    66
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        1.18      0.75      0.40    56
  RESIDENTIAL
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  "5-7 DWELLINGS/ACRE"       B        1.02      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.70
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
  SUBAREA AREA(ACRES) =    3.96      SUBAREA RUNOFF(CFS) =    6.76
  EFFECTIVE AREA(ACRES) =     54.48    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.72
  TOTAL AREA(ACRES) =     54.48        PEAK FLOW RATE(CFS) =      90.70

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.94   HALFSTREET FLOOD WIDTH(FEET) =  52.58
  FLOW VELOCITY(FEET/SEC.) =  5.11   DEPTH*VELOCITY(FT*FT/SEC.) =   4.79
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20710.00 =  3610.46 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020710.0 TO NODE LR020711.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2030.00  DOWNSTREAM ELEVATION(FEET) = 2025.00
  STREET LENGTH(FEET) =   298.59   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.04

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      95.20
    ***STREET FLOW SPLITS OVER STREET-CROWN***
    FULL DEPTH(FEET) =    0.94   FLOOD WIDTH(FEET) =   52.58
    FULL HALF-STREET VELOCITY(FEET/SEC.) =    5.34
    SPLIT DEPTH(FEET) =    0.36   SPLIT FLOOD WIDTH(FEET) =   10.07
    SPLIT FLOW(CFS) =    3.04   SPLIT VELOCITY(FEET/SEC.) =    2.53
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.94
    HALFSTREET FLOOD WIDTH(FEET) =   52.58
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.34
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.01
  STREET FLOW TRAVEL TIME(MIN.) =   0.93   Tc(MIN.) =  19.62
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.269
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.34      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.61      1.00    66
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.27      0.75      0.40    56
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  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.92      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.66
  SUBAREA AREA(ACRES) =    5.63      SUBAREA RUNOFF(CFS) =    9.01
  EFFECTIVE AREA(ACRES) =     60.11    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.72
  TOTAL AREA(ACRES) =     60.11        PEAK FLOW RATE(CFS) =      96.42

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.94   HALFSTREET FLOOD WIDTH(FEET) =  52.58
  FLOW VELOCITY(FEET/SEC.) =  5.34   DEPTH*VELOCITY(FT*FT/SEC.) =   5.01
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20711.00 =  3909.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020711.0 TO NODE LR020712.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2025.00  DOWNSTREAM(FEET) =   2020.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   279.66   CHANNEL SLOPE =  0.0179
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     96.42
  FLOW VELOCITY(FEET/SEC.) =   6.33   FLOW DEPTH(FEET) =   1.78
  TRAVEL TIME(MIN.) =   0.74   Tc(MIN.) =  20.35
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20712.00 =  4188.71 FEET.

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  FLOW PROCESS FROM NODE LR020712.0 TO NODE LR020712.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  20.35
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.219
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.62      0.75      0.70    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.72      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.66
  SUBAREA AREA(ACRES) =    3.34      SUBAREA RUNOFF(CFS) =    5.19
  EFFECTIVE AREA(ACRES) =     63.45   AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.71
  TOTAL AREA(ACRES) =     63.45       PEAK FLOW RATE(CFS) =      98.93

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020712.0 TO NODE LR020713.0 IS CODE =  54
```



```
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2020.00  DOWNSTREAM(FEET) =   2000.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   371.84   CHANNEL SLOPE =  0.0538
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     98.93
  FLOW VELOCITY(FEET/SEC.) =   9.47   FLOW DEPTH(FEET) =   1.36
  TRAVEL TIME(MIN.) =   0.65   Tc(MIN.) =  21.01
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20713.00 =  4560.55 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020713.0 TO NODE LR020713.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.01
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.177
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.10      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.26      0.61      1.00    66
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        1.09      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.82
  SUBAREA AREA(ACRES) =    6.45      SUBAREA RUNOFF(CFS) =    9.48
  EFFECTIVE AREA(ACRES) =     69.90   AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.72
  TOTAL AREA(ACRES) =     69.90       PEAK FLOW RATE(CFS) =     106.02

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.41

****************************************************************************
  FLOW PROCESS FROM NODE LR020713.0 TO NODE LR020724.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2000.00  DOWNSTREAM(FEET) =   1960.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   732.38   CHANNEL SLOPE =  0.0546
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.50
  CHANNEL FLOW THRU SUBAREA(CFS) =    106.02
  FLOW VELOCITY(FEET/SEC.) =   9.72   FLOW DEPTH(FEET) =   1.40
  TRAVEL TIME(MIN.) =   1.26   Tc(MIN.) =  22.26
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20724.00 =  5292.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020724.0 TO NODE LR020724.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
```

```
==============================================================================
  MAINLINE Tc(MIN) =  22.26
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.103
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.63      0.61      1.00    66
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        1.94      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.65
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.79
  SUBAREA AREA(ACRES) =    4.57      SUBAREA RUNOFF(CFS) =    6.54
  EFFECTIVE AREA(ACRES) =     74.47   AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =     74.47       PEAK FLOW RATE(CFS) =     107.87

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.00; 30M = 0.00; 1HR = 0.00; 3HR = 0.00; 6HR = 0.00; 24HR = 0.00

******************************************************************************
  FLOW PROCESS FROM NODE LR020724.0 TO NODE LR020724.0 IS CODE =  10
------------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
==============================================================================

******************************************************************************
  FLOW PROCESS FROM NODE LR020718.0 TO NODE LR020719.0 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   714.44
  ELEVATION DATA: UPSTREAM(FEET) =   2125.00  DOWNSTREAM(FEET) =   2040.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.738
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.686
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.21      0.75      0.60    56    8.74
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.38      0.61      1.00    66   14.97
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.85      0.75      0.70    56    9.29
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.71
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.75
  SUBAREA RUNOFF(CFS) =     21.07
  TOTAL AREA(ACRES) =      7.44   PEAK FLOW RATE(CFS) =     21.07

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.81; 3HR = 1.37; 6HR = 1.90; 24HR = 3.63

******************************************************************************
  FLOW PROCESS FROM NODE LR020719.0 TO NODE LR020719.0 IS CODE =   1
------------------------------------------------------------------------------
```



```
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.74
  RAINFALL INTENSITY(INCH/HR) =   3.69
  AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.71
  AREA-AVERAGED Ap =  0.75
  EFFECTIVE STREAM AREA(ACRES) =     7.44
  TOTAL STREAM AREA(ACRES) =     7.44
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     21.07

******************************************************************************
  FLOW PROCESS FROM NODE LR020718.5 TO NODE LR020719.0 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   522.86
  ELEVATION DATA: UPSTREAM(FEET) =   2100.00  DOWNSTREAM(FEET) =   2040.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.768
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.955
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.21      0.75      0.60    56    7.77
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.34      0.61      1.00    66   13.31
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.69      0.75      0.70    56    8.26
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.79
  SUBAREA RUNOFF(CFS) =     22.18
  TOTAL AREA(ACRES) =      7.24   PEAK FLOW RATE(CFS) =     22.18

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.81; 3HR = 1.37; 6HR = 1.90; 24HR = 3.63

******************************************************************************
  FLOW PROCESS FROM NODE LR020719.0 TO NODE LR020719.0 IS CODE =   1
------------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   7.77
  RAINFALL INTENSITY(INCH/HR) =   3.96
  AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.69
  AREA-AVERAGED Ap =  0.79
  EFFECTIVE STREAM AREA(ACRES) =     7.24
  TOTAL STREAM AREA(ACRES) =     7.24
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     22.18
```

```
 ** CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1     21.07   8.74    3.686  0.71( 0.54) 0.75     7.4 LR020718.0
     2     22.18   7.77    3.955  0.69( 0.55) 0.79     7.2 LR020718.5

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1     42.52   7.77    3.955  0.70( 0.54) 0.77    13.9 LR020718.5
     2     41.50   8.74    3.686  0.70( 0.54) 0.77    14.7 LR020718.0

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     42.52    Tc(MIN.) =     7.77
 EFFECTIVE AREA(ACRES) =    13.85   AREA-AVERAGED Fm(INCH/HR) =  0.54
 AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.77
 TOTAL AREA(ACRES) =     14.68
 LONGEST FLOWPATH FROM NODE  20718.00 TO NODE  20719.00 =   714.44 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020719.0 TO NODE LR020722.0 IS CODE =  92
----------------------------------------------------------------------------
 >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =   2040.00
 DOWNSTREAM NODE ELEVATION(FEET) =   2015.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   351.50
 "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
 PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
 PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
 MAXIMUM DEPTH(FEET) =   1.00
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.771
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        5.48      0.75      0.70    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     50.54
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.11
 AVERAGE FLOW DEPTH(FEET) =   0.61   FLOOD WIDTH(FEET) =   33.99
 "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.64   Tc(MIN.) =   8.41
 SUBAREA AREA(ACRES) =    5.48       SUBAREA RUNOFF(CFS) =   16.02
 EFFECTIVE AREA(ACRES) =   19.33     AREA-AVERAGED Fm(INCH/HR) =   0.54
 AREA-AVERAGED Fp(INCH/HR) =   0.72  AREA-AVERAGED Ap =   0.75
 TOTAL AREA(ACRES) =     20.16         PEAK FLOW RATE(CFS) =      56.24

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.81; 3HR = 1.37; 6HR = 1.90; 24HR = 3.63

 END OF SUBAREA "V" GUTTER HYDRAULICS:
 DEPTH(FEET) =  0.63   FLOOD WIDTH(FEET) =   35.78
 FLOW VELOCITY(FEET/SEC.) =   9.25   DEPTH*VELOCITY(FT*FT/SEC) =   5.82
```



```
 LONGEST FLOWPATH FROM NODE  20718.00 TO NODE  20722.00 =  1065.94 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020722.0 TO NODE LR020722.0 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.41
 RAINFALL INTENSITY(INCH/HR) =   3.77
 AREA-AVERAGED Fm(INCH/HR) =  0.54
 AREA-AVERAGED Fp(INCH/HR) =  0.72
 AREA-AVERAGED Ap =  0.75
 EFFECTIVE STREAM AREA(ACRES) =    19.33
 TOTAL STREAM AREA(ACRES) =    20.16
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     56.24

****************************************************************************
 FLOW PROCESS FROM NODE LR020720.0 TO NODE LR020721.0 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  1046.89
 ELEVATION DATA: UPSTREAM(FEET) =   2105.00  DOWNSTREAM(FEET) =   2020.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.682
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.096
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        5.65      0.75      0.70    56   11.68
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
 SUBAREA RUNOFF(CFS) =     13.08
 TOTAL AREA(ACRES) =      5.65   PEAK FLOW RATE(CFS) =     13.08

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 4.00

****************************************************************************
 FLOW PROCESS FROM NODE LR020721.0 TO NODE LR020722.0 IS CODE =  92
----------------------------------------------------------------------------
 >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =   2020.00
 DOWNSTREAM NODE ELEVATION(FEET) =   2015.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   115.32
 "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
 PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
 PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
 MAXIMUM DEPTH(FEET) =   1.00
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.051
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

```
     LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.32      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.12      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.64
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.93
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     19.10
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.65
  AVERAGE FLOW DEPTH(FEET) =   0.52   FLOOD WIDTH(FEET) =   22.94
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.29   Tc(MIN.) =  11.97
  SUBAREA AREA(ACRES) =    5.44       SUBAREA RUNOFF(CFS) =   12.04
  EFFECTIVE AREA(ACRES) =   11.09     AREA-AVERAGED Fm(INCH/HR) =   0.56
  AREA-AVERAGED Fp(INCH/HR) =   0.69  AREA-AVERAGED Ap =   0.81
  TOTAL AREA(ACRES) =     11.09         PEAK FLOW RATE(CFS) =      24.89

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 4.00

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.55   FLOOD WIDTH(FEET) =   26.67
  FLOW VELOCITY(FEET/SEC.) =   6.80   DEPTH*VELOCITY(FT*FT/SEC) =   3.75
  LONGEST FLOWPATH FROM NODE  20720.00 TO NODE  20722.00 =  1162.21 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020722.0 TO NODE LR020722.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.97
  RAINFALL INTENSITY(INCH/HR) =   3.05
  AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.69
  AREA-AVERAGED Ap =  0.81
  EFFECTIVE STREAM AREA(ACRES) =    11.09
  TOTAL STREAM AREA(ACRES) =    11.09
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     24.89

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     56.24   8.41    3.771  0.72( 0.54) 0.75    19.3 LR020718.5
      1     54.31   9.38    3.532  0.72( 0.54) 0.75    20.2 LR020718.0
      2     24.89  11.97    3.051  0.69( 0.56) 0.81    11.1 LR020720.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     78.78   8.41    3.771  0.71( 0.54) 0.77    27.1 LR020718.5
      2     77.57   9.38    3.532  0.71( 0.54) 0.77    28.9 LR020718.0
      3     70.48  11.97    3.051  0.70( 0.55) 0.77    31.2 LR020720.0
```



```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     78.78    Tc(MIN.) =     8.41
  EFFECTIVE AREA(ACRES) =    27.13   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.77
  TOTAL AREA(ACRES) =     31.25
  LONGEST FLOWPATH FROM NODE  20720.00 TO NODE  20722.00 =  1162.21 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020722.0 TO NODE LR020723.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   2015.00
  DOWNSTREAM NODE ELEVATION(FEET) =   2000.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   664.99
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.369
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.92      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        5.87      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     93.61
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.39
  AVERAGE FLOW DEPTH(FEET) =   0.81   FLOOD WIDTH(FEET) =   57.44
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   1.74   Tc(MIN.) =  10.15
  SUBAREA AREA(ACRES) =   11.79       SUBAREA RUNOFF(CFS) =   29.72
  EFFECTIVE AREA(ACRES) =   38.92     AREA-AVERAGED Fm(INCH/HR) =   0.55
  AREA-AVERAGED Fp(INCH/HR) =   0.69  AREA-AVERAGED Ap =   0.79
  TOTAL AREA(ACRES) =     43.04         PEAK FLOW RATE(CFS) =      98.70

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.44

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.82   FLOOD WIDTH(FEET) =   58.78
  FLOW VELOCITY(FEET/SEC.) =   6.44   DEPTH*VELOCITY(FT*FT/SEC) =   5.31
  LONGEST FLOWPATH FROM NODE  20720.00 TO NODE  20723.00 =  1827.20 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020723.0 TO NODE LR020724.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   2000.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1960.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   791.28
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
```

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 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.109
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                B        9.77      0.61      1.00    66
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"        B        0.38      0.75      0.50    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.62
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.98
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    110.14
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.06
 AVERAGE FLOW DEPTH(FEET) =   0.77   FLOOD WIDTH(FEET) =   52.06
 "V" GUTTER FLOW TRAVEL TIME(MIN.) =   1.46   Tc(MIN.) =  11.60
 SUBAREA AREA(ACRES) =   10.15       SUBAREA RUNOFF(CFS) =   22.87
 EFFECTIVE AREA(ACRES) =   49.07     AREA-AVERAGED Fm(INCH/HR) =   0.56
 AREA-AVERAGED Fp(INCH/HR) =   0.68  AREA-AVERAGED Ap =   0.83
 TOTAL AREA(ACRES) =     53.19         PEAK FLOW RATE(CFS) =     112.45

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.62

 END OF SUBAREA "V" GUTTER HYDRAULICS:
 DEPTH(FEET) =  0.77   FLOOD WIDTH(FEET) =   52.51
 FLOW VELOCITY(FEET/SEC.) =   9.10   DEPTH*VELOCITY(FT*FT/SEC) =   7.02
 LONGEST FLOWPATH FROM NODE  20720.00 TO NODE  20724.00 =  2618.48 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020724.0 TO NODE LR020724.0 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    112.45  11.60    3.109  0.68( 0.56) 0.83    49.1 LR020718.5
     2    109.59  12.60    2.960  0.68( 0.56) 0.83    50.8 LR020718.0
     3     99.45  15.24    2.639  0.68( 0.56) 0.83    53.2 LR020720.0
 LONGEST FLOWPATH FROM NODE  20720.00 TO NODE  20724.00 =  2618.48 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    107.87  22.26    2.103  0.68( 0.49) 0.73    74.5 LR020700.0
 LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20724.00 =  5292.93 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    203.81  11.60    3.109  0.68( 0.53) 0.79    87.9 LR020718.5
     2    203.11  12.60    2.960  0.68( 0.53) 0.78    92.9 LR020718.0
     3    197.93  15.24    2.639  0.68( 0.53) 0.78   104.2 LR020720.0
     4    181.64  22.26    2.103  0.68( 0.52) 0.77   127.7 LR020700.0
   TOTAL AREA(ACRES) =    127.66

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      203.81  Tc(MIN.) =   11.602
```



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 EFFECTIVE AREA(ACRES) =     87.87  AREA-AVERAGED Fm(INCH/HR) =  0.53
 AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.79
 TOTAL AREA(ACRES) =    127.66
 LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20724.00 =  5292.93 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020724.0 TO NODE LR020724.0 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE LR020724.0 TO NODE LR020725.0 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1960.00  DOWNSTREAM(FEET) =  1958.00
 FLOW LENGTH(FEET) =    81.40   MANNING'S N =  0.013
 DEPTH OF FLOW IN  48.0 INCH PIPE IS  38.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  18.83
 ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =    203.81
 PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =  11.67
 LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20725.00 =  5374.33 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020725.0 TO NODE LR020725.0 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE LR020658.0 TO NODE LR020658.0 IS CODE = 15.1
----------------------------------------------------------------------------
 >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
 PEAK FLOWRATE TABLE FILE NAME: 20658.DNA
 MEMORY BANK #  2 DEFINED AS FOLLOWS:
  STREAM     Q     Tc      Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.)  (INCH/HR)       (ACRES)    NODE
     1    717.36  14.30  0.74( 0.43) 0.58   348.6 LR020649.0
     2    738.79  19.77  0.74( 0.43) 0.58   453.1 LR020640.0
     3    689.36  25.39  0.74( 0.43) 0.58   511.6 LR020600.0
     4    620.55  30.61  0.74( 0.43) 0.58   534.2 LR020620.0
   TOTAL AREA(ACRES) =   534.20
 LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20658.00 =  7681.94 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020658.0 TO NODE LR020658.0 IS CODE = 14.0
----------------------------------------------------------------------------
 >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

 MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  STREAM     Q     Tc      Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.)  (INCH/HR)       (ACRES)    NODE
     1    717.36  14.30  0.74( 0.43) 0.58   348.6 LR020649.0
```

```
      2    738.79  19.77  0.74( 0.43) 0.58   453.1 LR020640.0
      3    689.36  25.39  0.74( 0.43) 0.58   511.6 LR020600.0
      4    620.55  30.61  0.74( 0.43) 0.58   534.2 LR020620.0
    TOTAL AREA(ACRES) =    534.20
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20658.00 =  7681.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020658.0 TO NODE LR020658.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020658.0 TO NODE LR020725.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2000.00  DOWNSTREAM ELEVATION(FEET) = 1958.00
  STREET LENGTH(FEET) =   941.91   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.72

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     753.69
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.23
    HALFSTREET FLOOD WIDTH(FEET) =   54.33
    AVERAGE FLOW VELOCITY(FEET/SEC.) =   12.61
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   15.47
  STREET FLOW TRAVEL TIME(MIN.) =   1.24   Tc(MIN.) =  21.02
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.177
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        2.46      0.75      0.50    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.48      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       12.20      0.61      1.00    66
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.32      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.65
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.85
  SUBAREA AREA(ACRES) =   20.46      SUBAREA RUNOFF(CFS) =   29.80
  EFFECTIVE AREA(ACRES) =    473.57    AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.59
  TOTAL AREA(ACRES) =    554.66        PEAK FLOW RATE(CFS) =     743.40
```



```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.22   HALFSTREET FLOOD WIDTH(FEET) =  54.03
  FLOW VELOCITY(FEET/SEC.) = 12.58   DEPTH*VELOCITY(FT*FT/SEC.) =  15.35

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.72
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  69.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  28.33
  PIPE-FLOW(CFS) =    736.21
  PIPEFLOW TRAVEL TIME(MIN.) =   0.55    Tc(MIN.) =  20.33
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.221
  SUBAREA AREA(ACRES) =   20.46      SUBAREA RUNOFF(CFS) =   30.61
  TOTAL AREA(ACRES) =    554.66        PEAK FLOW RATE(CFS) =    762.19

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   25.98
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.44
    HALFSTREET FLOOD WIDTH(FEET) =   15.54
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.13
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.24

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    746.92  14.79    2.688  0.73( 0.44) 0.60   369.0 LR020649.0
      2    762.19  20.33    2.221  0.73( 0.43) 0.59   473.6 LR020640.0
      3    712.03  25.88    1.921  0.74( 0.43) 0.59   532.0 LR020600.0
      4    641.04  31.11    1.720  0.73( 0.44) 0.59   554.7 LR020620.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    762.19  Tc(MIN.) =  20.33
  AREA-AVERAGED Fm(INCH/HR) =  0.43  AREA-AVERAGED Fp(INCH/HR) =  0.73
  AREA-AVERAGED Ap =  0.59  EFFECTIVE AREA(ACRES) =    473.57
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20725.00 =  8623.85 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020725.0 TO NODE LR020725.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    746.92  14.79    2.688  0.73( 0.44) 0.60   369.0 LR020649.0
      2    762.19  20.33    2.221  0.73( 0.43) 0.59   473.6 LR020640.0
      3    712.03  25.88    1.921  0.74( 0.43) 0.59   532.0 LR020600.0
      4    641.04  31.11    1.720  0.73( 0.44) 0.59   554.7 LR020620.0
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20725.00 =  8623.85 FEET.
```

```
  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    203.81  11.67    3.098  0.68( 0.53) 0.79    87.9 LR020718.5
      2    203.11  12.67    2.949  0.68( 0.53) 0.78    92.9 LR020718.0
      3    197.93  15.32    2.632  0.68( 0.53) 0.78   104.2 LR020720.0
      4    181.64  22.34    2.099  0.68( 0.52) 0.77   127.7 LR020700.0
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20725.00 =  5374.33 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    900.81  11.67    3.098  0.72( 0.46) 0.64   379.1 LR020718.5
      2    917.28  12.67    2.949  0.72( 0.46) 0.64   409.0 LR020718.0
      3    945.88  14.79    2.688  0.72( 0.46) 0.64   471.0 LR020649.0
      4    946.30  15.32    2.632  0.72( 0.46) 0.64   483.1 LR020720.0
      5    948.49  20.33    2.221  0.72( 0.45) 0.63   594.5 LR020640.0
      6    925.68  22.34    2.099  0.72( 0.45) 0.63   622.4 LR020700.0
      7    873.24  25.88    1.921  0.72( 0.45) 0.63   659.7 LR020600.0
      8    779.10  31.11    1.720  0.72( 0.45) 0.63   682.3 LR020620.0
    TOTAL AREA(ACRES) =    682.32

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      948.49  Tc(MIN.) =   20.328
  EFFECTIVE AREA(ACRES) =    594.51  AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.64
  TOTAL AREA(ACRES) =    682.32
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20725.00 =  8623.85 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020725.0 TO NODE LR020725.0 IS CODE =  71
----------------------------------------------------------------------------
  >>>>>PEAK FLOW RATE ESTIMATOR CHANGED TO UNIT-HYDROGRAPH METHOD<<<<<
  >>>>>USING TIME-OF-CONCENTRATION OF LONGEST FLOWPATH<<<<<
============================================================================
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.41;30M= 0.85;1H= 1.12;3H= 1.91;6H= 2.67;24H= 6.16
  S-GRAPH: VALLEY(DEV.)= 77.8%;VALLEY(UNDEV.)/DESERT= 22.2%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.34; LAG(HR) = 0.27; Fm(INCH/HR) = 0.45; Ybar = 0.45
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 1.00; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    682.32
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20725.00 =  8623.85 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0315; Lca/L=0.4,n=.0283; Lca/L=0.5,n=.0260;Lca/L=0.6,n=.0242
  TIME OF PEAK FLOW(HR) = 16.33  RUNOFF VOLUME(AF) =     201.26
  UNIT-HYDROGRAPH METHOD PEAK FLOW RATE(CFS) =   1047.18
  TOTAL PEAK FLOW RATE(CFS) =   1047.18 (SOURCE FLOW INCLUDED)
  RATIONAL METHOD PEAK FLOW RATE(CFS) =    948.49
   (UPSTREAM NODE PEAK FLOW RATE(CFS) =    948.49)
  PEAK FLOW RATE(CFS) USED =   1047.18

****************************************************************************
  FLOW PROCESS FROM NODE LR020725.0 TO NODE LR020725.0 IS CODE =  12
----------------------------------------------------------------------------
```



```
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020725.0 TO NODE LR020726.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1958.00  DOWNSTREAM(FEET) =   1872.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1421.01   CHANNEL SLOPE =  0.0605
  CHANNEL BASE(FEET) =    6.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   1047.18
  FLOW VELOCITY(FEET/SEC.) =  34.53   FLOW DEPTH(FEET) =   2.67
  TRAVEL TIME(MIN.) =   0.69   Tc(MIN.) =  21.01
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20726.00 = 10044.86 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020726.0 TO NODE LR020726.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.01
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.177
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        3.96      0.75      0.50    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.31      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       14.46      0.61      1.00    66
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.98      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.65
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.85
  SUBAREA AREA(ACRES) =   23.71
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.41;30M= 0.85;1H= 1.12;3H= 1.91;6H= 2.67;24H= 6.14
  S-GRAPH: VALLEY(DEV.)= 76.5%;VALLEY(UNDEV.)/DESERT= 23.5%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.35; LAG(HR) = 0.28; Fm(INCH/HR) = 0.46; Ybar = 0.46
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 1.00; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    706.03
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20726.00 = 10044.86 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0299; Lca/L=0.4,n=.0268; Lca/L=0.5,n=.0246;Lca/L=0.6,n=.0230
  TIME OF PEAK FLOW(HR) = 16.33  RUNOFF VOLUME(AF) =     206.32
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1056.06
  TOTAL AREA(ACRES) =    706.03       PEAK FLOW RATE(CFS) =    1056.06

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR020726.0 TO NODE LR020727.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1872.00  DOWNSTREAM(FEET) =   1835.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   760.88   CHANNEL SLOPE =  0.0486
  CHANNEL BASE(FEET) =    6.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   1056.06
  FLOW VELOCITY(FEET/SEC.) =  31.95   FLOW DEPTH(FEET) =   2.83
  TRAVEL TIME(MIN.) =   0.40   Tc(MIN.) =  21.41
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20727.00 = 10805.74 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020727.0 TO NODE LR020727.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.41
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.153
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        1.92      0.75      0.50    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.30      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       12.35      0.61      1.00    66
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.34      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.66
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.86
  SUBAREA AREA(ACRES) =   20.91
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.42;30M= 0.85;1H= 1.12;3H= 1.91;6H= 2.68;24H= 6.12
  S-GRAPH: VALLEY(DEV.)= 75.4%;VALLEY(UNDEV.)/DESERT= 24.6%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.36; LAG(HR) = 0.29; Fm(INCH/HR) = 0.46; Ybar = 0.46
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 1.00; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    726.94
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20727.00 = 10805.74 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0290; Lca/L=0.4,n=.0260; Lca/L=0.5,n=.0239;Lca/L=0.6,n=.0223
  TIME OF PEAK FLOW(HR) = 16.33  RUNOFF VOLUME(AF) =     210.68
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1067.74
  TOTAL AREA(ACRES) =    726.94       PEAK FLOW RATE(CFS) =    1067.74

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020727.0 TO NODE LR020728.0 IS CODE =  54
----------------------------------------------------------------------------
```



```
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1835.00  DOWNSTREAM(FEET) =   1820.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   832.56   CHANNEL SLOPE =  0.0180
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   4.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   1067.74
  FLOW VELOCITY(FEET/SEC.) =  22.01   FLOW DEPTH(FEET) =   3.32
  TRAVEL TIME(MIN.) =   0.63   Tc(MIN.) =  22.04
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20728.00 = 11638.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020728.0 TO NODE LR020728.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  22.04
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.115
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        3.88      0.75      0.50    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       12.91      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        6.79      0.75      0.60    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.42      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.73
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA AREA(ACRES) =   26.00
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.42;30M= 0.85;1H= 1.12;3H= 1.91;6H= 2.68;24H= 6.10
  S-GRAPH: VALLEY(DEV.)= 76.0%;VALLEY(UNDEV.)/DESERT= 24.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.37; LAG(HR) = 0.29; Fm(INCH/HR) = 0.46; Ybar = 0.46
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    752.94
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20728.00 = 11638.30 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0281; Lca/L=0.4,n=.0252; Lca/L=0.5,n=.0231;Lca/L=0.6,n=.0216
  TIME OF PEAK FLOW(HR) = 16.33  RUNOFF VOLUME(AF) =     216.83
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1080.17
  TOTAL AREA(ACRES) =    752.94       PEAK FLOW RATE(CFS) =    1080.17

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020728.0 TO NODE LR020748.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
```

```
  ELEVATION DATA: UPSTREAM(FEET) =   1820.00  DOWNSTREAM(FEET) =   1815.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   259.80   CHANNEL SLOPE =  0.0192
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   4.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   1080.17
  FLOW VELOCITY(FEET/SEC.) =  22.58   FLOW DEPTH(FEET) =   3.28
  TRAVEL TIME(MIN.) =   0.19   Tc(MIN.) =  22.23
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20748.00 = 11898.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020748.0 TO NODE LR020748.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  22.23
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.105
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.70      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =    0.70
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.42;30M= 0.85;1H= 1.12;3H= 1.91;6H= 2.68;24H= 6.10
  S-GRAPH: VALLEY(DEV.)= 76.0%;VALLEY(UNDEV.)/DESERT= 24.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.37; LAG(HR) = 0.30; Fm(INCH/HR) = 0.46; Ybar = 0.46
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    753.64
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20748.00 = 11898.10 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0278; Lca/L=0.4,n=.0249; Lca/L=0.5,n=.0229;Lca/L=0.6,n=.0214
  TIME OF PEAK FLOW(HR) = 16.33  RUNOFF VOLUME(AF) =     217.03
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1074.12
  TOTAL AREA(ACRES) =    753.64       PEAK FLOW RATE(CFS) =    1080.17
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020748.0 TO NODE LR020748.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =    1080.17    Tc(MIN.) =  22.23
  AREA-AVERAGED Fm(INCH/HR) =  0.46   Ybar = 0.46
  TOTAL AREA(ACRES) =     753.64

****************************************************************************
  FLOW PROCESS FROM NODE LR020730.0 TO NODE LR020731.0 IS CODE =  21
----------------------------------------------------------------------------
```



```
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   428.13
  ELEVATION DATA: UPSTREAM(FEET) =   1955.00  DOWNSTREAM(FEET) =   1935.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.104
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.856
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.49      0.61      1.00    66   14.71
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        2.96      0.75      0.50    56    8.10
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.68
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA RUNOFF(CFS) =     13.62
  TOTAL AREA(ACRES) =      4.45   PEAK FLOW RATE(CFS) =     13.62

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020731.0 TO NODE LR020732.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1935.00  DOWNSTREAM(FEET) =   1890.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   975.64   CHANNEL SLOPE =  0.0461
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     13.62
  FLOW VELOCITY(FEET/SEC.) =   9.58   FLOW DEPTH(FEET) =   0.38
  TRAVEL TIME(MIN.) =   1.70   Tc(MIN.) =   9.80
  LONGEST FLOWPATH FROM NODE  20730.00 TO NODE  20732.00 =  1403.77 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020732.0 TO NODE LR020732.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =   9.80
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.440
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        5.96      0.61      1.00    66
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        5.56      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.66
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.76
  SUBAREA AREA(ACRES) =   11.52      SUBAREA RUNOFF(CFS) =   30.50
  EFFECTIVE AREA(ACRES) =     15.97   AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.73
```

```
  TOTAL AREA(ACRES) =     15.97       PEAK FLOW RATE(CFS) =      42.46

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020732.0 TO NODE LR020733.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1890.00  DOWNSTREAM(FEET) =   1845.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   862.28   CHANNEL SLOPE =  0.0522
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     42.46
  FLOW VELOCITY(FEET/SEC.) =  14.22   FLOW DEPTH(FEET) =   0.68
  TRAVEL TIME(MIN.) =   1.01   Tc(MIN.) =  10.81
  LONGEST FLOWPATH FROM NODE  20730.00 TO NODE  20733.00 =  2266.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020733.0 TO NODE LR020733.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  10.81
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.243
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        0.59      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        7.70      0.61      1.00    66
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        5.46      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.65
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.79
  SUBAREA AREA(ACRES) =   13.75      SUBAREA RUNOFF(CFS) =   33.77
  EFFECTIVE AREA(ACRES) =     29.72   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.76
  TOTAL AREA(ACRES) =     29.72       PEAK FLOW RATE(CFS) =      73.40

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020733.0 TO NODE LR020748.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1845.00  DOWNSTREAM(FEET) =   1815.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   848.95   CHANNEL SLOPE =  0.0353
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     73.40
  FLOW VELOCITY(FEET/SEC.) =  14.33   FLOW DEPTH(FEET) =   1.02
```



```
  TRAVEL TIME(MIN.) =   0.99   Tc(MIN.) =  11.80
  LONGEST FLOWPATH FROM NODE  20730.00 TO NODE  20748.00 =  3115.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020748.0 TO NODE LR020748.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  11.80
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.078
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       41.76      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.84      0.75      0.60    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        4.95      0.75      0.50    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       17.32      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.70
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.76
  SUBAREA AREA(ACRES) =   64.87      SUBAREA RUNOFF(CFS) =  148.43
  EFFECTIVE AREA(ACRES) =     94.59   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.69  AREA-AVERAGED Ap =  0.76
  TOTAL AREA(ACRES) =     94.59       PEAK FLOW RATE(CFS) =     217.39

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.66

****************************************************************************
  FLOW PROCESS FROM NODE LR020748.0 TO NODE LR020748.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.80
  RAINFALL INTENSITY(INCH/HR) =   3.08
  AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.69
  AREA-AVERAGED Ap =  0.76
  EFFECTIVE STREAM AREA(ACRES) =    94.59
  TOTAL STREAM AREA(ACRES) =    94.59
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    217.39

****************************************************************************
  FLOW PROCESS FROM NODE LR020740.0 TO NODE LR020741.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   714.40
  ELEVATION DATA: UPSTREAM(FEET) =   2095.00  DOWNSTREAM(FEET) =   2070.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.865
```

```
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.068
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "2 DWELLINGS/ACRE"          B        7.73      0.75       0.70    56   11.86
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
 SUBAREA RUNOFF(CFS) =     17.70
 TOTAL AREA(ACRES) =      7.73   PEAK FLOW RATE(CFS) =     17.70

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

****************************************************************************
 FLOW PROCESS FROM NODE LR020741.0 TO NODE LR020742.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   2070.00  DOWNSTREAM(FEET) =   2035.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   418.24   CHANNEL SLOPE =  0.0837
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
 MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
 CHANNEL FLOW THRU SUBAREA(CFS) =     17.70
 FLOW VELOCITY(FEET/SEC.) =   6.06   FLOW DEPTH(FEET) =   1.08
 TRAVEL TIME(MIN.) =   1.15   Tc(MIN.) =  13.01
 LONGEST FLOWPATH FROM NODE  20740.00 TO NODE  20742.00 =  1132.64 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020742.0 TO NODE LR020742.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  13.01
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.902
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"          B        4.91      0.75       0.70    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
 SUBAREA AREA(ACRES) =     4.91      SUBAREA RUNOFF(CFS) =   10.51
 EFFECTIVE AREA(ACRES) =     12.64   AREA-AVERAGED Fm(INCH/HR) =  0.52
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.70
 TOTAL AREA(ACRES) =     12.64       PEAK FLOW RATE(CFS) =      27.06

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 6.50

****************************************************************************
 FLOW PROCESS FROM NODE LR020742.0 TO NODE LR020743.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   2035.00  DOWNSTREAM(FEET) =   2020.00
```



```
 CHANNEL LENGTH THRU SUBAREA(FEET) =   525.35   CHANNEL SLOPE =  0.0286
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
 MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
 CHANNEL FLOW THRU SUBAREA(CFS) =     27.06
 FLOW VELOCITY(FEET/SEC.) =   4.48   FLOW DEPTH(FEET) =   1.55
 TRAVEL TIME(MIN.) =   1.95   Tc(MIN.) =  14.97
 LONGEST FLOWPATH FROM NODE  20740.00 TO NODE  20743.00 =  1657.99 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020743.0 TO NODE LR020743.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  14.97
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.669
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"          B        7.69      0.75       0.70    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
 SUBAREA AREA(ACRES) =     7.69      SUBAREA RUNOFF(CFS) =   14.85
 EFFECTIVE AREA(ACRES) =     20.33   AREA-AVERAGED Fm(INCH/HR) =  0.52
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.70
 TOTAL AREA(ACRES) =     20.33       PEAK FLOW RATE(CFS) =      39.25

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.86

****************************************************************************
 FLOW PROCESS FROM NODE LR020743.0 TO NODE LR020744.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   2020.00  DOWNSTREAM(FEET) =   1970.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   496.30   CHANNEL SLOPE =  0.1007
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
 MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
 CHANNEL FLOW THRU SUBAREA(CFS) =     39.25
 FLOW VELOCITY(FEET/SEC.) =   7.91   FLOW DEPTH(FEET) =   1.41
 TRAVEL TIME(MIN.) =   1.05   Tc(MIN.) =  16.01
 LONGEST FLOWPATH FROM NODE  20740.00 TO NODE  20744.00 =  2154.29 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020744.0 TO NODE LR020744.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  16.01
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.563
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"          B        6.02      0.75       0.70    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
```

```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =    6.02      SUBAREA RUNOFF(CFS) =   11.05
  EFFECTIVE AREA(ACRES) =     26.35   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     26.35       PEAK FLOW RATE(CFS) =      48.35

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020744.0 TO NODE LR020745.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1970.00  DOWNSTREAM(FEET) =   1920.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   511.30   CHANNEL SLOPE =  0.0978
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     48.35
  FLOW VELOCITY(FEET/SEC.) =   8.26   FLOW DEPTH(FEET) =   1.53
  TRAVEL TIME(MIN.) =   1.03   Tc(MIN.) =  17.04
  LONGEST FLOWPATH FROM NODE  20740.00 TO NODE  20745.00 =  2665.59 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020745.0 TO NODE LR020745.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.04
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.468
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.61      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.17      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =    6.78      SUBAREA RUNOFF(CFS) =   11.88
  EFFECTIVE AREA(ACRES) =     33.13   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     33.13       PEAK FLOW RATE(CFS) =      58.00

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020745.0 TO NODE LR020746.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1920.00  DOWNSTREAM(FEET) =   1895.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   558.91   CHANNEL SLOPE =  0.0447
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
```



```
  CHANNEL FLOW THRU SUBAREA(CFS) =     58.00
  FLOW VELOCITY(FEET/SEC.) =   4.28   FLOW DEPTH(FEET) =   0.95
  TRAVEL TIME(MIN.) =   2.18   Tc(MIN.) =  19.22
  LONGEST FLOWPATH FROM NODE  20740.00 TO NODE  20746.00 =  3224.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020746.0 TO NODE LR020746.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  19.22
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.296
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.76      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        8.95      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    9.71      SUBAREA RUNOFF(CFS) =   15.54
  EFFECTIVE AREA(ACRES) =     42.84   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     42.84       PEAK FLOW RATE(CFS) =      68.42

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020746.0 TO NODE LR020747.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1895.00  DOWNSTREAM(FEET) =   1840.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   573.14   CHANNEL SLOPE =  0.0960
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     68.42
  FLOW VELOCITY(FEET/SEC.) =   5.89   FLOW DEPTH(FEET) =   0.88
  TRAVEL TIME(MIN.) =   1.62   Tc(MIN.) =  20.85
  LONGEST FLOWPATH FROM NODE  20740.00 TO NODE  20747.00 =  3797.64 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020747.0 TO NODE LR020747.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  20.85
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.187
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.57      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        9.61      0.75      0.70    56
```

```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =   10.18      SUBAREA RUNOFF(CFS) =   15.28
  EFFECTIVE AREA(ACRES) =     53.02   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     53.02       PEAK FLOW RATE(CFS) =      79.50

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020747.0 TO NODE LR020748.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1840.00  DOWNSTREAM(FEET) =   1815.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   752.37   CHANNEL SLOPE =  0.0332
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     79.50
  FLOW VELOCITY(FEET/SEC.) =   4.12   FLOW DEPTH(FEET) =   1.13
  TRAVEL TIME(MIN.) =   3.04   Tc(MIN.) =  23.89
  LONGEST FLOWPATH FROM NODE  20740.00 TO NODE  20748.00 =  4550.01 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020748.0 TO NODE LR020748.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  23.89
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.016
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        8.54      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.23      0.75      0.60    56
  PUBLIC PARK                B        0.78      0.75      0.85    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        1.16      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA AREA(ACRES) =   12.71      SUBAREA RUNOFF(CFS) =   17.30
  EFFECTIVE AREA(ACRES) =     65.73   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     65.73       PEAK FLOW RATE(CFS) =      88.60

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020748.0 TO NODE LR020748.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
```



```
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =  23.89
  RAINFALL INTENSITY(INCH/HR) =   2.02
  AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.69
  EFFECTIVE STREAM AREA(ACRES) =    65.73
  TOTAL STREAM AREA(ACRES) =    65.73
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     88.60
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1      1080.17   22.23      753.64  LR020620.0
     2       217.39   11.80       94.59  LR020730.0
     3        88.60   23.89       65.73  LR020740.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.42;30M= 0.85;1H= 1.13;3H= 1.92;6H= 2.69;24H= 6.02
  S-GRAPH: VALLEY(DEV.)= 76.6%;VALLEY(UNDEV.)/DESERT= 23.4%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.37; LAG(HR) = 0.30; Fm(INCH/HR) = 0.47; Ybar = 0.47
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    913.96
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20748.00 = 11898.10 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0278; Lca/L=0.4,n=.0249; Lca/L=0.5,n=.0229;Lca/L=0.6,n=.0214
  TIME OF PEAK FLOW(HR) = 16.33  RUNOFF VOLUME(AF) =     254.42
  PEAK FLOW RATE(CFS) =   1289.74

****************************************************************************
  FLOW PROCESS FROM NODE LR020748.0 TO NODE LR020749.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1815.00  DOWNSTREAM(FEET) =   1700.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2764.03   CHANNEL SLOPE =  0.0416
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   4.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   1289.74
  FLOW VELOCITY(FEET/SEC.) =  31.37   FLOW DEPTH(FEET) =   2.96
  TRAVEL TIME(MIN.) =   1.47   Tc(MIN.) =  23.70
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20749.00 = 14662.13 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020749.0 TO NODE LR020749.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  23.70
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.025
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       46.16      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        9.13      0.75      0.60    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B       13.04      0.75      0.50    56
  PUBLIC PARK                B       14.63      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   82.96
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.42;30M= 0.86;1H= 1.13;3H= 1.93;6H= 2.70;24H= 5.98
  S-GRAPH: VALLEY(DEV.)= 78.6%;VALLEY(UNDEV.)/DESERT= 21.4%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.40; LAG(HR) = 0.32; Fm(INCH/HR) = 0.47; Ybar = 0.48
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    996.92
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20749.00 = 14662.13 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0256; Lca/L=0.4,n=.0229; Lca/L=0.5,n=.0211;Lca/L=0.6,n=.0197
  TIME OF PEAK FLOW(HR) = 16.33  RUNOFF VOLUME(AF) =     273.19
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1327.05
  TOTAL AREA(ACRES) =    996.92       PEAK FLOW RATE(CFS) =    1327.05

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020749.0 TO NODE LR020763.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1700.00  DOWNSTREAM(FEET) =   1600.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3167.14   CHANNEL SLOPE =  0.0316
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   4.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   1327.05
  FLOW VELOCITY(FEET/SEC.) =  28.61   FLOW DEPTH(FEET) =   3.21
  TRAVEL TIME(MIN.) =   1.85   Tc(MIN.) =  25.55
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20763.00 = 17829.27 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020763.0 TO NODE LR020763.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  25.55
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.936
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B       17.57      0.75      0.50    56
  COMMERCIAL                 B        0.79      0.75      0.10    56
  RESIDENTIAL
```



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  "3-4 DWELLINGS/ACRE"       B       11.86      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       51.53      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.64
  SUBAREA AREA(ACRES) =   81.75
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.42;30M= 0.86;1H= 1.13;3H= 1.93;6H= 2.70;24H= 5.94
  S-GRAPH: VALLEY(DEV.)= 80.2%;VALLEY(UNDEV.)/DESERT= 19.8%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.43; LAG(HR) = 0.34; Fm(INCH/HR) = 0.47; Ybar = 0.48
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.95; 30M = 0.95; 1HR = 0.95;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1078.67
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20763.00 = 17829.27 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0237; Lca/L=0.4,n=.0213; Lca/L=0.5,n=.0195;Lca/L=0.6,n=.0182
  TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     293.02
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1394.40
  TOTAL AREA(ACRES) =   1078.67       PEAK FLOW RATE(CFS) =    1394.40

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.44; 30M = 0.91; 1HR = 1.20; 3HR = 1.99; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020763.0 TO NODE LR020763.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =    1394.40    Tc(MIN.) =  25.55
  AREA-AVERAGED Fm(INCH/HR) =  0.47   Ybar = 0.48
  TOTAL AREA(ACRES) =    1078.67

****************************************************************************
  FLOW PROCESS FROM NODE LR020750.0 TO NODE LR020751.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   910.09
  ELEVATION DATA: UPSTREAM(FEET) =   2180.00  DOWNSTREAM(FEET) =   2150.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.443
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.981
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.98      0.75      0.70    56   13.23
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.60      0.75      0.60    56   12.44
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA RUNOFF(CFS) =     19.15
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 TOTAL AREA(ACRES) =      8.58   PEAK FLOW RATE(CFS) =     19.15

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

****************************************************************************
 FLOW PROCESS FROM NODE LR020751.0 TO NODE LR020752.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   2150.00  DOWNSTREAM(FEET) =   2120.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   482.67   CHANNEL SLOPE =  0.0622
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
 MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
 CHANNEL FLOW THRU SUBAREA(CFS) =     19.15
 FLOW VELOCITY(FEET/SEC.) =   5.50   FLOW DEPTH(FEET) =   1.18
 TRAVEL TIME(MIN.) =   1.46   Tc(MIN.) =  13.90
 LONGEST FLOWPATH FROM NODE  20750.00 TO NODE  20752.00 =  1392.76 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020752.0 TO NODE LR020752.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  13.90
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.789
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.44      0.75      0.60    56
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        4.07      0.75      0.70    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
 SUBAREA AREA(ACRES) =    4.51      SUBAREA RUNOFF(CFS) =    9.23
 EFFECTIVE AREA(ACRES) =     13.09   AREA-AVERAGED Fm(INCH/HR) =  0.51
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
 TOTAL AREA(ACRES) =     13.09       PEAK FLOW RATE(CFS) =      26.89

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

****************************************************************************
 FLOW PROCESS FROM NODE LR020752.0 TO NODE LR020753.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2120.00  DOWNSTREAM ELEVATION(FEET) = 2100.00
 STREET LENGTH(FEET) =   408.17   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
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 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      51.54
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.52
  HALFSTREET FLOOD WIDTH(FEET) =   18.93
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.53
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.38
 STREET FLOW TRAVEL TIME(MIN.) =   1.04   Tc(MIN.) =  14.95
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.671
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        3.61      0.75      0.60    56
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B       21.76      0.75      0.70    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
 SUBAREA AREA(ACRES) =   25.37      SUBAREA RUNOFF(CFS) =   49.27
 EFFECTIVE AREA(ACRES) =     38.46    AREA-AVERAGED Fm(INCH/HR) =  0.51
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
 TOTAL AREA(ACRES) =     38.46        PEAK FLOW RATE(CFS) =      74.77

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.57   HALFSTREET FLOOD WIDTH(FEET) =  21.68
 FLOW VELOCITY(FEET/SEC.) =  7.38   DEPTH*VELOCITY(FT*FT/SEC.) =   4.23
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  408.2 FT WITH ELEVATION-DROP =  20.0 FT, IS   74.8 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20753.00
 LONGEST FLOWPATH FROM NODE  20750.00 TO NODE  20753.00 =  1800.93 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020753.0 TO NODE LR020754.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2100.00  DOWNSTREAM ELEVATION(FEET) = 2060.00
 STREET LENGTH(FEET) =   602.59   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
```

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 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.65

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      85.69
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.57
   HALFSTREET FLOOD WIDTH(FEET) =   21.55
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.55
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.88
 STREET FLOW TRAVEL TIME(MIN.) =   1.17   Tc(MIN.) =  16.12
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.552
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        9.79      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.89      0.75      0.60    56
 SCHOOL                     B        0.21      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
 SUBAREA AREA(ACRES) =   11.89      SUBAREA RUNOFF(CFS) =   21.85
 EFFECTIVE AREA(ACRES) =     50.35    AREA-AVERAGED Fm(INCH/HR) =  0.51
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
 TOTAL AREA(ACRES) =     50.35        PEAK FLOW RATE(CFS) =      92.51

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.58   HALFSTREET FLOOD WIDTH(FEET) =  22.16
 FLOW VELOCITY(FEET/SEC.) =  8.76   DEPTH*VELOCITY(FT*FT/SEC.) =   5.11
 LONGEST FLOWPATH FROM NODE  20750.00 TO NODE  20754.00 =  2403.52 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020754.0 TO NODE LR020755.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2060.00  DOWNSTREAM ELEVATION(FEET) = 2040.00
 STREET LENGTH(FEET) =   704.58   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.82

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     127.37
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.73
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   HALFSTREET FLOOD WIDTH(FEET) =   29.43
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.06
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.14
 STREET FLOW TRAVEL TIME(MIN.) =   1.66   Tc(MIN.) =  17.79
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.406
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B       31.15      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        6.15      0.75      0.60    56
 SCHOOL                     B        3.45      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
 SUBAREA AREA(ACRES) =   40.75      SUBAREA RUNOFF(CFS) =   69.69
 EFFECTIVE AREA(ACRES) =     91.10    AREA-AVERAGED Fm(INCH/HR) =  0.51
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
 TOTAL AREA(ACRES) =     91.10        PEAK FLOW RATE(CFS) =     155.58

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.78   HALFSTREET FLOOD WIDTH(FEET) =  31.81
 FLOW VELOCITY(FEET/SEC.) =  7.42   DEPTH*VELOCITY(FT*FT/SEC.) =   5.76
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  704.6 FT WITH ELEVATION-DROP =  20.0 FT, IS   95.6 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20755.00
 LONGEST FLOWPATH FROM NODE  20750.00 TO NODE  20755.00 =  3108.10 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020755.0 TO NODE LR020756.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2040.00  DOWNSTREAM ELEVATION(FEET) = 2000.00
 STREET LENGTH(FEET) =   785.85   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.69

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     165.01
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.72
   HALFSTREET FLOOD WIDTH(FEET) =   29.06
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.36
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.75
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  STREET FLOW TRAVEL TIME(MIN.) =   1.40   Tc(MIN.) =  19.18
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.299
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        9.12      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.57      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   11.69      SUBAREA RUNOFF(CFS) =   18.85
  EFFECTIVE AREA(ACRES) =    102.79    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    102.79        PEAK FLOW RATE(CFS) =     165.67

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.72   HALFSTREET FLOOD WIDTH(FEET) =  29.06
  FLOW VELOCITY(FEET/SEC.) =  9.40   DEPTH*VELOCITY(FT*FT/SEC.) =   6.78

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.69
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.96
  PIPE-FLOW(CFS) =     47.05
  PIPEFLOW TRAVEL TIME(MIN.) =   0.88    Tc(MIN.) =  18.66
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.338
  SUBAREA AREA(ACRES) =   11.69      SUBAREA RUNOFF(CFS) =   19.26
  TOTAL AREA(ACRES) =    102.79        PEAK FLOW RATE(CFS) =    169.23

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  122.18
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.66
    HALFSTREET FLOOD WIDTH(FEET) =   25.89
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.64
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.69
  LONGEST FLOWPATH FROM NODE  20750.00 TO NODE  20756.00 =  3893.95 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020756.0 TO NODE LR020757.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2000.00  DOWNSTREAM ELEVATION(FEET) = 1950.00
  STREET LENGTH(FEET) =   840.67   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00
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  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.67

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     177.55
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.72
    HALFSTREET FLOOD WIDTH(FEET) =   29.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =   10.12
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.28
  STREET FLOW TRAVEL TIME(MIN.) =   1.39   Tc(MIN.) =  20.05
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.239
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        8.65      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.04      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   10.69      SUBAREA RUNOFF(CFS) =   16.64
  EFFECTIVE AREA(ACRES) =    113.48    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    113.48        PEAK FLOW RATE(CFS) =     176.78

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.72   HALFSTREET FLOOD WIDTH(FEET) =  28.94
  FLOW VELOCITY(FEET/SEC.) = 10.11   DEPTH*VELOCITY(FT*FT/SEC.) =   7.27

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.67
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.17
  PIPE-FLOW(CFS) =     50.86
  PIPEFLOW TRAVEL TIME(MIN.) =   0.87    Tc(MIN.) =  19.53
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.275
  SUBAREA AREA(ACRES) =   10.69      SUBAREA RUNOFF(CFS) =   16.99
  TOTAL AREA(ACRES) =    113.48        PEAK FLOW RATE(CFS) =    180.41

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  129.55
    ***STREET FLOWING FULL***
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    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.65
    HALFSTREET FLOOD WIDTH(FEET) =   25.64
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.33
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.09
  LONGEST FLOWPATH FROM NODE  20750.00 TO NODE  20757.00 =  4734.62 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020757.0 TO NODE LR020758.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1950.00  DOWNSTREAM ELEVATION(FEET) = 1920.00
  STREET LENGTH(FEET) =   946.77   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.79

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     226.58
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.86
    HALFSTREET FLOOD WIDTH(FEET) =   36.08
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.46
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.29
  STREET FLOW TRAVEL TIME(MIN.) =   1.86   Tc(MIN.) =  21.39
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.154
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       50.96      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       11.45      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   62.41      SUBAREA RUNOFF(CFS) =   92.34
  EFFECTIVE AREA(ACRES) =    175.89    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    175.89        PEAK FLOW RATE(CFS) =     260.38

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.90   HALFSTREET FLOOD WIDTH(FEET) =  38.16
  FLOW VELOCITY(FEET/SEC.) =  8.72   DEPTH*VELOCITY(FT*FT/SEC.) =   7.88

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
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         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.79
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.47
  PIPE-FLOW(CFS) =    109.46
  PIPEFLOW TRAVEL TIME(MIN.) =   1.02    Tc(MIN.) =  20.55
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.206
  SUBAREA AREA(ACRES) =   62.41      SUBAREA RUNOFF(CFS) =   95.30
  TOTAL AREA(ACRES) =    175.89        PEAK FLOW RATE(CFS) =    268.72

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  159.25
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.77
    HALFSTREET FLOOD WIDTH(FEET) =   31.44
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.77
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.97
  LONGEST FLOWPATH FROM NODE  20750.00 TO NODE  20758.00 =  5681.39 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020758.0 TO NODE LR020759.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1920.00  DOWNSTREAM ELEVATION(FEET) = 1875.00
  STREET LENGTH(FEET) =  1200.03   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.76

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     284.07
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.90
    HALFSTREET FLOOD WIDTH(FEET) =   38.22
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.49
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    8.58
  STREET FLOW TRAVEL TIME(MIN.) =   2.11   Tc(MIN.) =  22.66
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.081
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       18.41      0.75      0.70    56
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  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.34      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   21.75      SUBAREA RUNOFF(CFS) =   30.71
  EFFECTIVE AREA(ACRES) =    197.64    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    197.64        PEAK FLOW RATE(CFS) =     279.54

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.90   HALFSTREET FLOOD WIDTH(FEET) =  37.97
  FLOW VELOCITY(FEET/SEC.) =  9.45   DEPTH*VELOCITY(FT*FT/SEC.) =   8.50

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.76
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.75
  PIPE-FLOW(CFS) =    147.42
  PIPEFLOW TRAVEL TIME(MIN.) =   1.13    Tc(MIN.) =  21.67
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.137
  SUBAREA AREA(ACRES) =   21.75      SUBAREA RUNOFF(CFS) =   31.81
  TOTAL AREA(ACRES) =    197.64        PEAK FLOW RATE(CFS) =    289.51

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  142.10
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.72
    HALFSTREET FLOOD WIDTH(FEET) =   29.06
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.06
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.82
  LONGEST FLOWPATH FROM NODE  20750.00 TO NODE  20759.00 =  6881.42 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020759.0 TO NODE LR020760.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1875.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1845.00
  FLOW LENGTH(FEET) =  1440.55   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  57.0 INCH PIPE IS  41.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.88
  PIPE-FLOW(CFS) =    289.51
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.15    Tc(MIN.) =  22.82
  LONGEST FLOWPATH FROM NODE  20750.00 TO NODE  20760.00 =  8321.97 FEET.
```



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****************************************************************************
  FLOW PROCESS FROM NODE LR020760.0 TO NODE LR020760.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  22.82
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.072
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B       47.33      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        8.18      0.75      0.60    56
  PUBLIC PARK                 B        1.84      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =   57.35      SUBAREA RUNOFF(CFS) =   80.27
  EFFECTIVE AREA(ACRES) =    254.99   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    254.99        PEAK FLOW RATE(CFS) =     358.17

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020760.0 TO NODE LR020761.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1845.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1770.00
  FLOW LENGTH(FEET) =  1840.39   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  57.0 INCH PIPE IS  37.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  28.62
  PIPE-FLOW(CFS) =    358.17
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.07    Tc(MIN.) =  23.90
  LONGEST FLOWPATH FROM NODE  20750.00 TO NODE  20761.00 = 10162.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020761.0 TO NODE LR020761.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  23.90
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.015
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B       56.58      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B       12.66      0.75      0.60    56
```

```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   69.24      SUBAREA RUNOFF(CFS) =   93.82
  EFFECTIVE AREA(ACRES) =    324.23   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    324.23       PEAK FLOW RATE(CFS) =     439.08

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020761.0 TO NODE LR020762.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1770.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1740.00
  FLOW LENGTH(FEET) =  1572.80   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  USER SPECIFIED PIPE SYSTEM UNDER PRESSURE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.88
  PIPE-FLOW(CFS) =    331.68
  PIPEFLOW TRAVEL TIME(MIN.) =   1.55    Tc(MIN.) =  25.45
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.941
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        7.27      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       33.52      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   40.79      SUBAREA RUNOFF(CFS) =   52.51
  EFFECTIVE AREA(ACRES) =    365.02    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    365.02        PEAK FLOW RATE(CFS) =    469.79

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 26.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  138.10
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.83
```



```
    HALFSTREET FLOOD WIDTH(FEET) =   34.06
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.01
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.98
  LONGEST FLOWPATH FROM NODE  20750.00 TO NODE  20762.00 = 11735.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020762.0 TO NODE LR020763.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1740.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1600.00
  FLOW LENGTH(FEET) =  1727.01   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  34.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  39.97
  PIPE-FLOW(CFS) =    469.79
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.72    Tc(MIN.) =  26.17
  LONGEST FLOWPATH FROM NODE  20750.00 TO NODE  20763.00 = 13462.17 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020763.0 TO NODE LR020763.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  26.17
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.908
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B       19.08      0.75      0.50    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B      133.50      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       16.16      0.75      0.60    56
  COMMERCIAL                 B       11.70      0.75      0.10    56
  MOBILE HOME PARK           B        5.20      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.62
  SUBAREA AREA(ACRES) =  185.64      SUBAREA RUNOFF(CFS) =  241.34
  EFFECTIVE AREA(ACRES) =    550.66   AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.66
  TOTAL AREA(ACRES) =    550.66       PEAK FLOW RATE(CFS) =     700.54

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.88; 1HR = 1.15; 3HR = 1.97; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020763.0 TO NODE LR020763.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
```

```
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  26.17
 RAINFALL INTENSITY(INCH/HR) =   1.91
 AREA-AVERAGED Fm(INCH/HR) =  0.49
 AREA-AVERAGED Fp(INCH/HR) =  0.75
 AREA-AVERAGED Ap =  0.66
 EFFECTIVE STREAM AREA(ACRES) =   550.66
 TOTAL STREAM AREA(ACRES) =   550.66
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    700.54
 ** CONFLUENCE DATA **
 STREAM      Q        Tc      AREA      HEADWATER
 NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
    1      1394.40   25.55     1078.67  LR020620.0
    2       700.54   26.17      550.66  LR020750.0

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 UNIT-HYDROGRAPH DATA:
 RAINFALL(INCH): 5M= 0.42;30M= 0.86;1H= 1.14;3H= 1.94;6H= 2.72;24H= 5.79
 S-GRAPH: VALLEY(DEV.)= 86.9%;VALLEY(UNDEV.)/DESERT= 13.1%
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
 Tc(HR) = 0.43; LAG(HR) = 0.34; Fm(INCH/HR) = 0.48; Ybar = 0.49
 USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
 DEPTH-AREA FACTORS: 5M = 0.93; 30M = 0.93; 1HR = 0.93;
 3HR = 0.99; 6HR = 0.99; 24HR= 1.00
 UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1629.33
 LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20763.00 = 17829.27 FEET.
  EQUIVALENT BASIN FACTOR APPROXIMATIONS:
  Lca/L=0.3,n=.0237; Lca/L=0.4,n=.0213; Lca/L=0.5,n=.0195;Lca/L=0.6,n=.0182
 TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     421.21
 PEAK FLOW RATE(CFS) =   2073.67

****************************************************************************
 FLOW PROCESS FROM NODE LR020763.0 TO NODE LR020764.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1600.00  DOWNSTREAM(FEET) =   1510.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  3292.21   CHANNEL SLOPE =  0.0273
 CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   5.00
 CHANNEL FLOW THRU SUBAREA(CFS) =   2073.67
 FLOW VELOCITY(FEET/SEC.) =  30.26   FLOW DEPTH(FEET) =   3.87
 TRAVEL TIME(MIN.) =   1.81   Tc(MIN.) =  27.36
 LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20764.00 = 21121.48 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020764.0 TO NODE LR020764.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  27.36
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.858
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       27.93      0.75      0.60    56
```



```
 MOBILE HOME PARK           B        2.86      0.75      0.25    56
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B       36.04      0.75      0.70    56
 PUBLIC PARK                B        0.07      0.75      0.85    56
 COMMERCIAL                 B        0.16      0.75      0.10    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.64
 SUBAREA AREA(ACRES) =   67.06
 UNIT-HYDROGRAPH DATA:
 RAINFALL(INCH): 5M= 0.42;30M= 0.87;1H= 1.14;3H= 1.95;6H= 2.72;24H= 5.78
 S-GRAPH: VALLEY(DEV.)= 87.4%;VALLEY(UNDEV.)/DESERT= 12.6%
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
 Tc(HR) = 0.46; LAG(HR) = 0.36; Fm(INCH/HR) = 0.48; Ybar = 0.49
 USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
 DEPTH-AREA FACTORS: 5M = 0.92; 30M = 0.92; 1HR = 0.92;
 3HR = 0.99; 6HR = 0.99; 24HR= 1.00
 UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1696.39
 LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20764.00 = 21121.48 FEET.
  EQUIVALENT BASIN FACTOR APPROXIMATIONS:
  Lca/L=0.3,n=.0222; Lca/L=0.4,n=.0199; Lca/L=0.5,n=.0183;Lca/L=0.6,n=.0171
 TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     437.42
 UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   2075.29
 TOTAL AREA(ACRES) =   1696.39       PEAK FLOW RATE(CFS) =    2075.29

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
 FLOW PROCESS FROM NODE LR020764.0 TO NODE LR020764.0 IS CODE = 152
----------------------------------------------------------------------------
 >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
 PEAK FLOWRATE TABLE FILE NAME: 20764.DNA
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)     =   1696.39  TC(MIN.) =     27.36
 AREA-AVERAGED Fm(INCH/HR)=  0.48   Ybar =  0.49
 PEAK FLOW RATE(CFS)   =   2075.29
============================================================================
============================================================================
 END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

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**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
         (c) Copyright 1983-2002 Advanced Engineering Software (aes)
             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                           County of San Bernardino
                         Transportation Flood Control

                          Water Resources Division

--------------------------------------------------------------------------
  FILE NAME: LR0208ZZ.Z13
  TIME/DATE OF STUDY: 09:47 09/27/2004
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.1910

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)     (n)
===  =====  ========  =================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
```



```
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


**************************************************************************
  FLOW PROCESS FROM NODE LR020800.0 TO NODE LR020800.5 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   706.90
  ELEVATION DATA: UPSTREAM(FEET) =   2210.00  DOWNSTREAM(FEET) =   2170.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.095
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.470
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.13      0.75       0.70    56   10.73
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.48      0.75       0.60    56   10.09
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA RUNOFF(CFS) =     23.00
  TOTAL AREA(ACRES) =      8.61   PEAK FLOW RATE(CFS) =     23.00

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.36; 6HR = 1.90; 24HR = 3.59

**************************************************************************
  FLOW PROCESS FROM NODE LR020800.5 TO NODE LR020801.0 IS CODE =  63
--------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
==========================================================================
  UPSTREAM ELEVATION(FEET) = 2170.00  DOWNSTREAM ELEVATION(FEET) = 2160.00
  STREET LENGTH(FEET) =   371.36   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
```

```
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      30.47
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.49
    HALFSTREET FLOOD WIDTH(FEET) =   18.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.41
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.17
  STREET FLOW TRAVEL TIME(MIN.) =   1.40   Tc(MIN.) =  11.50
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.209
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        4.82      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        1.32      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    6.14      SUBAREA RUNOFF(CFS) =   14.93
  EFFECTIVE AREA(ACRES) =     14.75    AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.67
  TOTAL AREA(ACRES) =     14.75        PEAK FLOW RATE(CFS) =      35.91

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.36; 6HR = 1.90; 24HR = 3.59

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.51   HALFSTREET FLOOD WIDTH(FEET) =  18.56
  FLOW VELOCITY(FEET/SEC.) =  4.71   DEPTH*VELOCITY(FT*FT/SEC.) =   2.41
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20801.00 =  1078.26 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020801.0 TO NODE LR020802.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2160.00  DOWNSTREAM ELEVATION(FEET) = 2153.00
  STREET LENGTH(FEET) =   226.34   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.80

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      43.12
```



```
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.53
    HALFSTREET FLOOD WIDTH(FEET) =   19.30
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.27
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.77
  STREET FLOW TRAVEL TIME(MIN.) =   0.72   Tc(MIN.) =  12.21
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.095
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.63      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        5.58      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    6.21      SUBAREA RUNOFF(CFS) =   14.41
  EFFECTIVE AREA(ACRES) =     20.96    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     20.96        PEAK FLOW RATE(CFS) =      48.81

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.54   HALFSTREET FLOOD WIDTH(FEET) =  20.15
  FLOW VELOCITY(FEET/SEC.) =  5.51   DEPTH*VELOCITY(FT*FT/SEC.) =   2.99
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20802.00 =  1304.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020802.0 TO NODE LR020803.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2153.00  DOWNSTREAM ELEVATION(FEET) = 2138.00
  STREET LENGTH(FEET) =   346.96   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.73

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      52.88
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.53
    HALFSTREET FLOOD WIDTH(FEET) =   19.54
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.32
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.35
  STREET FLOW TRAVEL TIME(MIN.) =   0.92   Tc(MIN.) =  13.13
```

```
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.964
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        3.18      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.51      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
 SUBAREA AREA(ACRES) =    3.69      SUBAREA RUNOFF(CFS) =    8.14
 EFFECTIVE AREA(ACRES) =     24.65    AREA-AVERAGED Fm(INCH/HR) =  0.51
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
 TOTAL AREA(ACRES) =     24.65        PEAK FLOW RATE(CFS) =      54.47

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.54   HALFSTREET FLOOD WIDTH(FEET) =  19.78
 FLOW VELOCITY(FEET/SEC.) =  6.36   DEPTH*VELOCITY(FT*FT/SEC.) =   3.41
 LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20803.00 =  1651.56 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020803.0 TO NODE LR020804.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2138.00  DOWNSTREAM ELEVATION(FEET) = 2133.00
 STREET LENGTH(FEET) =   266.26   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      69.30
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.64
   HALFSTREET FLOOD WIDTH(FEET) =   25.22
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.15
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.32
 STREET FLOW TRAVEL TIME(MIN.) =   0.86   Tc(MIN.) =  13.99
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.853
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B       12.65      0.75      0.70    56
 RESIDENTIAL
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 "3-4 DWELLINGS/ACRE"       B        1.45      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
 SUBAREA AREA(ACRES) =   14.10      SUBAREA RUNOFF(CFS) =   29.66
 EFFECTIVE AREA(ACRES) =     38.75    AREA-AVERAGED Fm(INCH/HR) =  0.51
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
 TOTAL AREA(ACRES) =     38.75        PEAK FLOW RATE(CFS) =      81.67

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.68   HALFSTREET FLOOD WIDTH(FEET) =  26.80
 FLOW VELOCITY(FEET/SEC.) =  5.41   DEPTH*VELOCITY(FT*FT/SEC.) =   3.66
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  266.3 FT WITH ELEVATION-DROP =   5.0 FT, IS   42.2 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20804.00
 LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20804.00 =  1917.82 FEET.

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 FLOW PROCESS FROM NODE LR020804.0 TO NODE LR020805.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2133.00  DOWNSTREAM ELEVATION(FEET) = 2128.00
 STREET LENGTH(FEET) =   315.22   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      91.72
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.72
   HALFSTREET FLOOD WIDTH(FEET) =   29.00
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.23
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.76
 STREET FLOW TRAVEL TIME(MIN.) =   1.01   Tc(MIN.) =  15.00
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.737
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        7.96      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        2.07      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
 SUBAREA AREA(ACRES) =   10.03      SUBAREA RUNOFF(CFS) =   20.12
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  EFFECTIVE AREA(ACRES) =     48.78    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     48.78        PEAK FLOW RATE(CFS) =      97.72

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.73   HALFSTREET FLOOD WIDTH(FEET) =  29.73
  FLOW VELOCITY(FEET/SEC.) =  5.31   DEPTH*VELOCITY(FT*FT/SEC.) =   3.90
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  315.2 FT WITH ELEVATION-DROP =   5.0 FT, IS   28.1 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20805.00
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20805.00 =  2233.04 FEET.

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  FLOW PROCESS FROM NODE LR020805.0 TO NODE LR020806.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2128.00  DOWNSTREAM ELEVATION(FEET) = 2098.00
  STREET LENGTH(FEET) =   616.63   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     146.03
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.70
    HALFSTREET FLOOD WIDTH(FEET) =   27.96
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.92
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.24
  STREET FLOW TRAVEL TIME(MIN.) =   1.15   Tc(MIN.) =  16.15
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.618
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       36.94      0.75      0.70    56
  SCHOOL                     B        3.99      0.75      0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        9.63      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.22      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA AREA(ACRES) =   50.78      SUBAREA RUNOFF(CFS) =   96.59
  EFFECTIVE AREA(ACRES) =     99.56    AREA-AVERAGED Fm(INCH/HR) =  0.51
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  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     99.56        PEAK FLOW RATE(CFS) =     189.10

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.76   HALFSTREET FLOOD WIDTH(FEET) =  30.89
  FLOW VELOCITY(FEET/SEC.) =  9.54   DEPTH*VELOCITY(FT*FT/SEC.) =   7.23

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.70
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.63
  PIPE-FLOW(CFS) =     46.00
  PIPEFLOW TRAVEL TIME(MIN.) =   0.70    Tc(MIN.) =  15.70
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.662
  SUBAREA AREA(ACRES) =   50.78      SUBAREA RUNOFF(CFS) =   98.64
  TOTAL AREA(ACRES) =     99.56        PEAK FLOW RATE(CFS) =    193.11

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  147.11
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.70
    HALFSTREET FLOOD WIDTH(FEET) =   28.02
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.95
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.27
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20806.00 =  2849.67 FEET.

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  FLOW PROCESS FROM NODE LR020806.0 TO NODE LR020807.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2098.00  DOWNSTREAM ELEVATION(FEET) = 2090.00
  STREET LENGTH(FEET) =   573.68   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     197.63
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
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  STREET FLOW DEPTH(FEET) =  0.94
  HALFSTREET FLOOD WIDTH(FEET) =   40.23
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.97
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.64
STREET FLOW TRAVEL TIME(MIN.) =   1.60   Tc(MIN.) =  17.30
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.512
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"2 DWELLINGS/ACRE"         B        2.85      0.75      0.70    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        1.45      0.75      0.60    56
SCHOOL                     B        0.68      0.75      0.60    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.66
SUBAREA AREA(ACRES) =    4.98      SUBAREA RUNOFF(CFS) =    9.05
EFFECTIVE AREA(ACRES) =    104.54    AREA-AVERAGED Fm(INCH/HR) =  0.51
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
TOTAL AREA(ACRES) =    104.54        PEAK FLOW RATE(CFS) =     193.11
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.94   HALFSTREET FLOOD WIDTH(FEET) =  39.87
FLOW VELOCITY(FEET/SEC.) =  5.94   DEPTH*VELOCITY(FT*FT/SEC.) =   5.57

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =   9.69
PIPE-FLOW(CFS) =     57.58
PIPEFLOW TRAVEL TIME(MIN.) =   0.99    Tc(MIN.) =  16.69
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.567
SUBAREA AREA(ACRES) =    4.98      SUBAREA RUNOFF(CFS) =    9.30
TOTAL AREA(ACRES) =    104.54        PEAK FLOW RATE(CFS) =    193.84

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  136.26
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.83
  HALFSTREET FLOOD WIDTH(FEET) =   34.74
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.48
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.57
LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20807.00 =  3423.35 FEET.

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FLOW PROCESS FROM NODE LR020807.0 TO NODE LR020808.0 IS CODE =  63
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
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>>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 2090.00  DOWNSTREAM ELEVATION(FEET) = 2070.00
STREET LENGTH(FEET) =   620.19   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.79

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     201.81
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.83
  HALFSTREET FLOOD WIDTH(FEET) =   34.37
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.28
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.86
STREET FLOW TRAVEL TIME(MIN.) =   1.25   Tc(MIN.) =  17.93
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.458
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"2 DWELLINGS/ACRE"         B        8.19      0.75      0.70    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        0.94      0.75      0.60    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
SUBAREA AREA(ACRES) =    9.13      SUBAREA RUNOFF(CFS) =   15.96
EFFECTIVE AREA(ACRES) =    113.67    AREA-AVERAGED Fm(INCH/HR) =  0.51
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
TOTAL AREA(ACRES) =    113.67        PEAK FLOW RATE(CFS) =     199.57

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.82   HALFSTREET FLOOD WIDTH(FEET) =  34.25
FLOW VELOCITY(FEET/SEC.) =  8.25   DEPTH*VELOCITY(FT*FT/SEC.) =   6.81

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.79
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  13.82
PIPE-FLOW(CFS) =     67.91
PIPEFLOW TRAVEL TIME(MIN.) =   0.75    Tc(MIN.) =  17.43
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.500
SUBAREA AREA(ACRES) =    9.13      SUBAREA RUNOFF(CFS) =   16.30
TOTAL AREA(ACRES) =    113.67        PEAK FLOW RATE(CFS) =    203.87
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  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  135.96
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.73
    HALFSTREET FLOOD WIDTH(FEET) =   29.43
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.53
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.49
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20808.00 =  4043.54 FEET.

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  FLOW PROCESS FROM NODE LR020808.0 TO NODE LR020809.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2070.00  DOWNSTREAM ELEVATION(FEET) = 2020.00
  STREET LENGTH(FEET) =   545.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.60

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     224.41
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.72
    HALFSTREET FLOOD WIDTH(FEET) =   29.18
    AVERAGE FLOW VELOCITY(FEET/SEC.) =   12.63
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    9.14
  STREET FLOW TRAVEL TIME(MIN.) =   0.72   Tc(MIN.) =  18.15
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.440
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       20.40      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.29      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =   23.69      SUBAREA RUNOFF(CFS) =   41.09
  EFFECTIVE AREA(ACRES) =    137.36    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    137.36        PEAK FLOW RATE(CFS) =     238.83

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50
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  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.74   HALFSTREET FLOOD WIDTH(FEET) =  29.92
  FLOW VELOCITY(FEET/SEC.) = 12.82   DEPTH*VELOCITY(FT*FT/SEC.) =   9.46

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.60
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  24.84
  PIPE-FLOW(CFS) =    147.68
  PIPEFLOW TRAVEL TIME(MIN.) =   0.37    Tc(MIN.) =  17.80
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.469
  SUBAREA AREA(ACRES) =   23.69      SUBAREA RUNOFF(CFS) =   41.70
  TOTAL AREA(ACRES) =    137.36        PEAK FLOW RATE(CFS) =    242.41

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   94.72
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.56
    HALFSTREET FLOOD WIDTH(FEET) =   21.07
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.86
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.53
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20809.00 =  4588.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020809.0 TO NODE LR020810.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2020.00  DOWNSTREAM ELEVATION(FEET) = 2010.00
  STREET LENGTH(FEET) =   570.75   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     255.35
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.99
    HALFSTREET FLOOD WIDTH(FEET) =   42.55
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.91
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.85
  STREET FLOW TRAVEL TIME(MIN.) =   1.38   Tc(MIN.) =  19.18
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 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.361
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B       12.89      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        2.65      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
 SUBAREA AREA(ACRES) =   15.54      SUBAREA RUNOFF(CFS) =   25.88
 EFFECTIVE AREA(ACRES) =    152.90    AREA-AVERAGED Fm(INCH/HR) =  0.51
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
 TOTAL AREA(ACRES) =    152.90        PEAK FLOW RATE(CFS) =     254.95

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.99   HALFSTREET FLOOD WIDTH(FEET) =  42.55
 FLOW VELOCITY(FEET/SEC.) =  6.90   DEPTH*VELOCITY(FT*FT/SEC.) =   6.84

 *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
        THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
 SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
 ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
 ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
 ASSUME FULL-FLOWING PIPELINE
 PIPE-FLOW VELOCITY(FEET/SEC.) =  13.94
 PIPE-FLOW(CFS) =    175.31
 PIPEFLOW TRAVEL TIME(MIN.) =   0.68    Tc(MIN.) =  18.48
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.414
 SUBAREA AREA(ACRES) =   15.54      SUBAREA RUNOFF(CFS) =   26.62
 TOTAL AREA(ACRES) =    152.90        PEAK FLOW RATE(CFS) =    262.21

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   86.90
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.70
   HALFSTREET FLOOD WIDTH(FEET) =   27.84
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.35
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.73
 LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20810.00 =  5159.29 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020810.0 TO NODE LR020811.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2010.00  DOWNSTREAM ELEVATION(FEET) = 1970.00
 STREET LENGTH(FEET) =   617.03   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
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 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.65

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     291.75
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.83
   HALFSTREET FLOOD WIDTH(FEET) =   34.62
   AVERAGE FLOW VELOCITY(FEET/SEC.) =   11.81
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    9.83
 STREET FLOW TRAVEL TIME(MIN.) =   0.87   Tc(MIN.) =  19.35
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.348
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B       30.03      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        5.60      0.75      0.60    56
 PUBLIC PARK                B        0.12      0.75      0.85    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
 SUBAREA AREA(ACRES) =   35.75      SUBAREA RUNOFF(CFS) =   59.08
 EFFECTIVE AREA(ACRES) =    188.65    AREA-AVERAGED Fm(INCH/HR) =  0.51
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
 TOTAL AREA(ACRES) =    188.65        PEAK FLOW RATE(CFS) =     312.24

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.85   HALFSTREET FLOOD WIDTH(FEET) =  35.59
 FLOW VELOCITY(FEET/SEC.) = 11.98   DEPTH*VELOCITY(FT*FT/SEC.) =  10.20

 *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
        THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.65
 SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
 ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
 ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
 ASSUME FULL-FLOWING PIPELINE
 PIPE-FLOW VELOCITY(FEET/SEC.) =  23.34
 PIPE-FLOW(CFS) =    193.83
 PIPEFLOW TRAVEL TIME(MIN.) =   0.44    Tc(MIN.) =  18.92
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.380
 SUBAREA AREA(ACRES) =   35.75      SUBAREA RUNOFF(CFS) =   60.10
 TOTAL AREA(ACRES) =    188.65        PEAK FLOW RATE(CFS) =    317.65

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  123.82
   ***STREET FLOWING FULL***
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    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.64
    HALFSTREET FLOOD WIDTH(FEET) =   24.79
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.51
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.05
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20811.00 =  5776.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020811.0 TO NODE LR020812.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1970.00  DOWNSTREAM(FEET) =   1910.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1453.09   CHANNEL SLOPE =  0.0413
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    317.65
  FLOW VELOCITY(FEET/SEC.) =   4.69   FLOW DEPTH(FEET) =   1.16
  TRAVEL TIME(MIN.) =   5.17   Tc(MIN.) =  24.09
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20812.00 =  7229.41 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020812.0 TO NODE LR020812.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  24.09
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.059
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.60      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.55      0.75      0.60    56
  PUBLIC PARK                B       18.85      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.81
  SUBAREA AREA(ACRES) =   26.00      SUBAREA RUNOFF(CFS) =   34.07
  EFFECTIVE AREA(ACRES) =    214.65   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =    214.65       PEAK FLOW RATE(CFS) =     317.65
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020812.0 TO NODE LR020813.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1910.00  DOWNSTREAM(FEET) =   1870.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1523.12   CHANNEL SLOPE =  0.0263
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
```



```
  CHANNEL FLOW THRU SUBAREA(CFS) =    317.65
  FLOW VELOCITY(FEET/SEC.) =   3.94   FLOW DEPTH(FEET) =   1.27
  TRAVEL TIME(MIN.) =   6.44   Tc(MIN.) =  30.53
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20813.00 =  8752.53 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020813.0 TO NODE LR020813.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  30.53
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.786
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B       80.80      0.75      0.85    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B      130.26      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       24.87      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.88      0.75      0.90    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.24      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.74
  SUBAREA AREA(ACRES) =  239.05      SUBAREA RUNOFF(CFS) =  264.79
  EFFECTIVE AREA(ACRES) =    453.70   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.72
  TOTAL AREA(ACRES) =    453.70       PEAK FLOW RATE(CFS) =     509.30

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020813.0 TO NODE LR020814.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1870.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1800.00
  FLOW LENGTH(FEET) =  1542.94   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  63.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  63.0 INCH PIPE IS  42.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  32.47
  PIPE-FLOW(CFS) =    509.30
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.79    Tc(MIN.) =  31.32
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20814.00 = 10295.47 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020814.0 TO NODE LR020814.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  31.32
```

```
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.759
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       11.54      0.75      0.60    56
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B       58.78      0.75      0.70    56
 PUBLIC PARK                B        6.25      0.75      0.85    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
 SUBAREA AREA(ACRES) =   76.57      SUBAREA RUNOFF(CFS) =   85.29
 EFFECTIVE AREA(ACRES) =    530.27   AREA-AVERAGED Fm(INCH/HR) =  0.54
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.72
 TOTAL AREA(ACRES) =    530.27       PEAK FLOW RATE(CFS) =     583.46

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.44; 30M = 0.89; 1HR = 1.17; 3HR = 1.98; 6HR = 2.75; 24HR = 5.50

****************************************************************************
 FLOW PROCESS FROM NODE LR020814.0 TO NODE LR020815.0 IS CODE =  42
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1800.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1720.00
 FLOW LENGTH(FEET) =  1968.59   MANNING'S N =  0.013

 USER SPECIFIED PIPE DIAMETER(INCH) =  66.00    NUMBER OF PIPES =   1
 DEPTH OF FLOW IN  66.0 INCH PIPE IS  47.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  32.05
 PIPE-FLOW(CFS) =    583.46
 *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
 PIPEFLOW TRAVEL TIME(MIN.) =   1.02    Tc(MIN.) =  32.35
 LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20815.00 = 12264.06 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020815.0 TO NODE LR020815.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  32.35
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.726
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       28.73      0.75      0.60    56
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B      126.12      0.75      0.70    56
 PUBLIC PARK                B       14.88      0.75      0.85    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
 SUBAREA AREA(ACRES) =  169.73      SUBAREA RUNOFF(CFS) =  184.03
 EFFECTIVE AREA(ACRES) =    700.00   AREA-AVERAGED Fm(INCH/HR) =  0.53
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.71
 TOTAL AREA(ACRES) =    700.00       PEAK FLOW RATE(CFS) =     751.45
```



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 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.44; 30M = 0.90; 1HR = 1.18; 3HR = 1.99; 6HR = 2.75; 24HR = 5.50

****************************************************************************
 FLOW PROCESS FROM NODE LR020815.0 TO NODE LR020815.0 IS CODE =  71
----------------------------------------------------------------------------
 >>>>>PEAK FLOW RATE ESTIMATOR CHANGED TO UNIT-HYDROGRAPH METHOD<<<<<
 >>>>>USING TIME-OF-CONCENTRATION OF LONGEST FLOWPATH<<<<<
============================================================================
 UNIT-HYDROGRAPH DATA:
 RAINFALL(INCH): 5M= 0.43;30M= 0.88;1H= 1.15;3H= 1.96;6H= 2.73;24H= 5.46
 S-GRAPH: VALLEY(DEV.)= 99.5%;VALLEY(UNDEV.)/DESERT=  0.5%
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
 Tc(HR) = 0.54; LAG(HR) = 0.43; Fm(INCH/HR) = 0.53; Ybar = 0.56
 USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
 DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
 3HR = 1.00; 6HR = 1.00; 24HR= 1.00
 UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    700.00
 LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20815.00 = 12264.06 FEET.
  EQUIVALENT BASIN FACTOR APPROXIMATIONS:
  Lca/L=0.3,n=.0414; Lca/L=0.4,n=.0371; Lca/L=0.5,n=.0341;Lca/L=0.6,n=.0318
 TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     153.88
 UNIT-HYDROGRAPH METHOD PEAK FLOW RATE(CFS) =    803.83
 TOTAL PEAK FLOW RATE(CFS) =    803.83 (SOURCE FLOW INCLUDED)
 RATIONAL METHOD PEAK FLOW RATE(CFS) =    751.45
  (UPSTREAM NODE PEAK FLOW RATE(CFS) =    751.45)
 PEAK FLOW RATE(CFS) USED =    803.83

****************************************************************************
 FLOW PROCESS FROM NODE LR020815.0 TO NODE LR020816.0 IS CODE =  48
----------------------------------------------------------------------------
 >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1720.00  DOWNSTREAM(FEET) =  1680.00
 FLOW LENGTH(FEET) =  1236.10   MANNING'S N =  0.014
 GIVEN BOX BASEWIDTH(FEET) =   6.00   GIVEN BOX HEIGHT(FEET) =   3.00
 *GIVEN BOX HEIGHT(FEET) =   3.00   ESTIMATED BOX BASEWIDTH(FEET) =   13.30
 ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  20.15
 BOX-FLOW(CFS) =    803.83
 BOX-FLOW TRAVEL TIME(MIN.) =   1.02    Tc(MIN.) =  33.37
 LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20816.00 = 13500.16 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020816.0 TO NODE LR020816.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  33.37
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.694
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       11.74      0.75      0.60    56
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B       40.54      0.75      0.70    56
```

```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   52.28
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.42;30M= 0.86;1H= 1.13;3H= 1.92;6H= 2.67;24H= 5.33
  S-GRAPH: VALLEY(DEV.)= 99.6%;VALLEY(UNDEV.)/DESERT=  0.4%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.56; LAG(HR) = 0.44; Fm(INCH/HR) = 0.53; Ybar = 0.56
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    752.28
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20816.00 = 13500.16 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0395; Lca/L=0.4,n=.0354; Lca/L=0.5,n=.0326;Lca/L=0.6,n=.0304
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     160.15
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    824.96
  TOTAL AREA(ACRES) =    752.28       PEAK FLOW RATE(CFS) =     824.96

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.59

****************************************************************************
  FLOW PROCESS FROM NODE LR020816.0 TO NODE LR020823.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1680.00  DOWNSTREAM(FEET) =  1635.00
  FLOW LENGTH(FEET) =  1150.94   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   6.00   GIVEN BOX HEIGHT(FEET) =   3.00
  *GIVEN BOX HEIGHT(FEET) =   3.00   ESTIMATED BOX BASEWIDTH(FEET) =   12.52
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  21.97
  BOX-FLOW(CFS) =    824.96
  BOX-FLOW TRAVEL TIME(MIN.) =   0.87    Tc(MIN.) =  34.24
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20823.00 = 14651.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020823.0 TO NODE LR020823.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  34.24
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.668
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        8.26      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.53      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   10.79
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.42;30M= 0.86;1H= 1.13;3H= 1.92;6H= 2.68;24H= 5.33
  S-GRAPH: VALLEY(DEV.)= 99.6%;VALLEY(UNDEV.)/DESERT=  0.4%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
```



```
  Tc(HR) = 0.57; LAG(HR) = 0.46; Fm(INCH/HR) = 0.53; Ybar = 0.56
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    763.07
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20823.00 = 14651.10 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0381; Lca/L=0.4,n=.0342; Lca/L=0.5,n=.0314;Lca/L=0.6,n=.0293
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     162.64
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    821.21
  TOTAL AREA(ACRES) =    763.07       PEAK FLOW RATE(CFS) =     824.96
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020823.0 TO NODE LR020823.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =     824.96    Tc(MIN.) =  34.24
  AREA-AVERAGED Fm(INCH/HR) =  0.53   Ybar = 0.56
  TOTAL AREA(ACRES) =     763.07

****************************************************************************
  FLOW PROCESS FROM NODE LR020820.0 TO NODE LR020821.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   724.32
  ELEVATION DATA: UPSTREAM(FEET) =   1735.00  DOWNSTREAM(FEET) =   1720.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.463
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.058
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.07      0.75      0.60    56   12.46
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.01      0.75      0.70    56   13.25
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA RUNOFF(CFS) =     18.57
  TOTAL AREA(ACRES) =      8.08   PEAK FLOW RATE(CFS) =     18.57

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020821.0 TO NODE LR020822.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) = 1720.00  DOWNSTREAM ELEVATION(FEET) = 1700.00
  STREET LENGTH(FEET) =   668.72   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.81

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      32.62
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.49
    HALFSTREET FLOOD WIDTH(FEET) =   18.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.69
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.31
  STREET FLOW TRAVEL TIME(MIN.) =   2.38   Tc(MIN.) =  14.84
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.754
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.10      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        9.73      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA AREA(ACRES) =   13.83      SUBAREA RUNOFF(CFS) =   28.04
  EFFECTIVE AREA(ACRES) =     21.91    AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.67
  TOTAL AREA(ACRES) =     21.91        PEAK FLOW RATE(CFS) =      44.39

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.53   HALFSTREET FLOOD WIDTH(FEET) =  19.60
  FLOW VELOCITY(FEET/SEC.) =  5.28   DEPTH*VELOCITY(FT*FT/SEC.) =   2.81
  LONGEST FLOWPATH FROM NODE  20820.00 TO NODE  20822.00 =  1393.04 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020822.0 TO NODE LR020823.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1700.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1635.00
  FLOW LENGTH(FEET) =  1753.00   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
```



```
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  15.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.56
  PIPE-FLOW(CFS) =     44.39
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.87    Tc(MIN.) =  16.71
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.564
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       28.07      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        8.56      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   36.63      SUBAREA RUNOFF(CFS) =   67.85
  EFFECTIVE AREA(ACRES) =     58.54    AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.67
  TOTAL AREA(ACRES) =     58.54        PEAK FLOW RATE(CFS) =    108.50

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.87; 1HR = 1.15; 3HR = 1.96; 6HR = 2.75; 24HR = 5.50

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  6.0       STREET HALFWIDTH(FEET) = 18.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   64.11
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.57
    HALFSTREET FLOOD WIDTH(FEET) =   21.55
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.40
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.65
  LONGEST FLOWPATH FROM NODE  20820.00 TO NODE  20823.00 =  3146.04 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020823.0 TO NODE LR020823.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  16.71
  RAINFALL INTENSITY(INCH/HR) =   2.56
  AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.67
  EFFECTIVE STREAM AREA(ACRES) =    58.54
  TOTAL STREAM AREA(ACRES) =    58.54
```

```
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    108.50
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1       824.96   34.24      763.07  LR020800.0
     2       108.50   16.71       58.54  LR020820.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.42;30M= 0.86;1H= 1.13;3H= 1.92;6H= 2.68;24H= 5.34
  S-GRAPH: VALLEY(DEV.)= 99.6%;VALLEY(UNDEV.)/DESERT=  0.4%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.57; LAG(HR) = 0.46; Fm(INCH/HR) = 0.53; Ybar = 0.56
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    821.61
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20823.00 = 14651.10 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0381; Lca/L=0.4,n=.0342; Lca/L=0.5,n=.0314;Lca/L=0.6,n=.0293
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     176.19
  PEAK FLOW RATE(CFS) =    883.94

****************************************************************************
  FLOW PROCESS FROM NODE LR020823.0 TO NODE LR020824.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1635.00  DOWNSTREAM(FEET) =  1599.00
  FLOW LENGTH(FEET) =  1479.71   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   6.00   GIVEN BOX HEIGHT(FEET) =   3.00
  *GIVEN BOX HEIGHT(FEET) =   3.00   ESTIMATED BOX BASEWIDTH(FEET) =   16.47
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  17.89
  BOX-FLOW(CFS) =    883.94
  BOX-FLOW TRAVEL TIME(MIN.) =   1.38    Tc(MIN.) =  35.62
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20824.00 = 16130.81 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020824.0 TO NODE LR020824.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  35.62
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.629
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       96.44      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       25.64      0.75      0.60    56
  COMMERCIAL                 B        1.07      0.75      0.10    56
  PUBLIC PARK                B        0.22      0.75      0.85    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        3.67      0.63      1.00    65
  SCHOOL                     B        0.34      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
```



```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =  127.38
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.41;30M= 0.83;1H= 1.10;3H= 1.85;6H= 2.58;24H= 5.11
  S-GRAPH: VALLEY(DEV.)= 99.3%;VALLEY(UNDEV.)/DESERT=  0.7%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.59; LAG(HR) = 0.47; Fm(INCH/HR) = 0.53; Ybar = 0.57
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    948.99
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20824.00 = 16130.81 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0366; Lca/L=0.4,n=.0328; Lca/L=0.5,n=.0302;Lca/L=0.6,n=.0281
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     191.45
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    932.33
  TOTAL AREA(ACRES) =    948.99       PEAK FLOW RATE(CFS) =     932.33

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.59

****************************************************************************
  FLOW PROCESS FROM NODE LR020824.0 TO NODE LR020825.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1599.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1550.00
  FLOW LENGTH(FEET) =  1211.57   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  81.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  81.0 INCH PIPE IS  54.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  36.20
  PIPE-FLOW(CFS) =    932.33
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.56    Tc(MIN.) =  36.18
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20825.00 = 17342.38 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020825.0 TO NODE LR020825.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  36.18
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.613
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       10.70      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       31.03      0.75      0.70    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        0.52      0.63      1.00    65
  PUBLIC PARK                B        6.54      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
```

```
  SUBAREA AREA(ACRES) =   48.79
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.41;30M= 0.84;1H= 1.10;3H= 1.86;6H= 2.58;24H= 5.13
  S-GRAPH: VALLEY(DEV.)= 99.2%;VALLEY(UNDEV.)/DESERT=  0.8%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.60; LAG(HR) = 0.48; Fm(INCH/HR) = 0.53; Ybar = 0.57
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    997.78
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20825.00 = 17342.38 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0352; Lca/L=0.4,n=.0316; Lca/L=0.5,n=.0290;Lca/L=0.6,n=.0271
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     202.46
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    966.74
  TOTAL AREA(ACRES) =    997.78       PEAK FLOW RATE(CFS) =     966.74

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020825.0 TO NODE LR020826.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1550.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1535.00
  FLOW LENGTH(FEET) =   755.22   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  93.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  93.0 INCH PIPE IS  64.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  27.93
  PIPE-FLOW(CFS) =    966.74
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.45    Tc(MIN.) =  36.63
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20826.00 = 18097.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020826.0 TO NODE LR020826.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  36.63
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.601
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        9.73      0.75      0.60    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        0.52      0.63      1.00    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.62
  SUBAREA AREA(ACRES) =   10.25
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.41;30M= 0.84;1H= 1.11;3H= 1.86;6H= 2.59;24H= 5.13
  S-GRAPH: VALLEY(DEV.)= 99.2%;VALLEY(UNDEV.)/DESERT=  0.8%
```



```
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.61; LAG(HR) = 0.49; Fm(INCH/HR) = 0.53; Ybar = 0.56
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.95; 30M = 0.95; 1HR = 0.95;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1008.03
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20826.00 = 18097.60 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0344; Lca/L=0.4,n=.0308; Lca/L=0.5,n=.0283;Lca/L=0.6,n=.0264
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     205.03
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    971.02
  TOTAL AREA(ACRES) =   1008.03       PEAK FLOW RATE(CFS) =     971.02

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020826.0 TO NODE LR020827.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1535.00  DOWNSTREAM(FEET) =  1500.00
  FLOW LENGTH(FEET) =   969.04   MANNING'S N =  0.013
  GIVEN BOX BASEWIDTH(FEET) =  10.00   GIVEN BOX HEIGHT(FEET) =   3.50
  *GIVEN BOX HEIGHT(FEET) =   3.50   ESTIMATED BOX BASEWIDTH(FEET) =   11.40
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  24.33
  BOX-FLOW(CFS) =    971.02
  BOX-FLOW TRAVEL TIME(MIN.) =   0.66    Tc(MIN.) =  37.29
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20827.00 = 19066.64 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020827.0 TO NODE LR020827.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  37.29
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.584
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       21.08      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   21.08
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.41;30M= 0.84;1H= 1.11;3H= 1.86;6H= 2.59;24H= 5.14
  S-GRAPH: VALLEY(DEV.)= 99.2%;VALLEY(UNDEV.)/DESERT=  0.8%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.62; LAG(HR) = 0.50; Fm(INCH/HR) = 0.52; Ybar = 0.56
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.95; 30M = 0.95; 1HR = 0.95;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1029.11
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20827.00 = 19066.64 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0337; Lca/L=0.4,n=.0302; Lca/L=0.5,n=.0277;Lca/L=0.6,n=.0259
```

```
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     210.40
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    991.52
  TOTAL AREA(ACRES) =   1029.11       PEAK FLOW RATE(CFS) =     991.52

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020827.0 TO NODE LR020828.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1500.00  DOWNSTREAM(FEET) =  1480.00
  FLOW LENGTH(FEET) =   712.41   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  10.00   GIVEN BOX HEIGHT(FEET) =   3.50
  *GIVEN BOX HEIGHT(FEET) =   3.50   ESTIMATED BOX BASEWIDTH(FEET) =   13.83
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  20.49
  BOX-FLOW(CFS) =    991.52
  BOX-FLOW TRAVEL TIME(MIN.) =   0.58    Tc(MIN.) =  37.87
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20828.00 = 19779.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020828.0 TO NODE LR020828.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  37.87
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.570
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       24.73      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   24.73
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.41;30M= 0.84;1H= 1.11;3H= 1.87;6H= 2.59;24H= 5.15
  S-GRAPH: VALLEY(DEV.)= 99.2%;VALLEY(UNDEV.)/DESERT=  0.8%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.63; LAG(HR) = 0.50; Fm(INCH/HR) = 0.52; Ybar = 0.56
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.95; 30M = 0.95; 1HR = 0.95;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1053.84
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20828.00 = 19779.05 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0332; Lca/L=0.4,n=.0297; Lca/L=0.5,n=.0273;Lca/L=0.6,n=.0255
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     216.70
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1015.41
  TOTAL AREA(ACRES) =   1053.84       PEAK FLOW RATE(CFS) =    1015.41

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020828.0 TO NODE LR020829.0 IS CODE =  48
```



```
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1480.00  DOWNSTREAM(FEET) =  1465.00
  FLOW LENGTH(FEET) =   766.85   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  10.00   GIVEN BOX HEIGHT(FEET) =   3.50
  *GIVEN BOX HEIGHT(FEET) =   3.50   ESTIMATED BOX BASEWIDTH(FEET) =   16.58
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  17.49
  BOX-FLOW(CFS) =   1015.41
  BOX-FLOW TRAVEL TIME(MIN.) =   0.73    Tc(MIN.) =  38.60
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20829.00 = 20545.90 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020829.0 TO NODE LR020829.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  38.60
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.552
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       13.31      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   13.31
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.41;30M= 0.84;1H= 1.11;3H= 1.87;6H= 2.60;24H= 5.15
  S-GRAPH: VALLEY(DEV.)= 99.2%;VALLEY(UNDEV.)/DESERT=  0.8%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.64; LAG(HR) = 0.51; Fm(INCH/HR) = 0.52; Ybar = 0.56
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.95; 30M = 0.95; 1HR = 0.95;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1067.15
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20829.00 = 20545.90 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0327; Lca/L=0.4,n=.0294; Lca/L=0.5,n=.0270;Lca/L=0.6,n=.0252
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     220.09
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1021.33
  TOTAL AREA(ACRES) =   1067.15       PEAK FLOW RATE(CFS) =    1021.33

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020829.0 TO NODE LR020829.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020764.0 TO NODE LR020764.0 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
```

```
  PEAK FLOWRATE TABLE FILE NAME: 20764.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2075.29    Tc(MIN.) =  27.36
  AREA-AVERAGED Fm(INCH/HR) =  0.48    Ybar = 0.49
  TOTAL AREA(ACRES) =    1696.39
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20764.00 = 21121.48 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020764.0 TO NODE LR020764.0 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2075.29    Tc(MIN.) =  27.36
  AREA-AVERAGED Fm(INCH/HR) =  0.48    Ybar = 0.49
  TOTAL AREA(ACRES) =    1696.39
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20764.00 = 21121.48 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020764.0 TO NODE LR020764.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020764.0 TO NODE LR020829.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1510.00  DOWNSTREAM(FEET) =  1465.00
  FLOW LENGTH(FEET) =  1297.04   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  15.00   GIVEN BOX HEIGHT(FEET) =   5.00
  FLOWDEPTH IN BOX IS  3.78 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  36.59
  BOX-FLOW(CFS) =   2075.29
  BOX-FLOW TRAVEL TIME(MIN.) =   0.59    Tc(MIN.) =  27.95
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20829.00 = 22418.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020829.0 TO NODE LR020829.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     2075.29    Tc(MIN.) =  27.95
  AREA-AVERAGED Fm(INCH/HR) =  0.48    Ybar = 0.49
  TOTAL AREA(ACRES) =    1696.39
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20829.00 = 22418.52 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     1021.33    Tc(MIN.) =  38.60
  AREA-AVERAGED Fm(INCH/HR) =  0.52    Ybar = 0.56
  TOTAL AREA(ACRES) =    1067.15
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20829.00 = 20545.90 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
```



```
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.42;30M= 0.86;1H= 1.13;3H= 1.92;6H= 2.67;24H= 5.54
  S-GRAPH: VALLEY(DEV.)= 92.0%;VALLEY(UNDEV.)/DESERT=  8.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.47; LAG(HR) = 0.37; Fm(INCH/HR) = 0.50; Ybar = 0.52
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.88; 30M = 0.88; 1HR = 0.88;
  3HR = 0.98; 6HR = 0.99; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   2763.54
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20829.00 = 22418.52 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0217; Lca/L=0.4,n=.0195; Lca/L=0.5,n=.0179;Lca/L=0.6,n=.0167
  TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     649.07
  PEAK FLOW RATE(CFS) =    3060.23

****************************************************************************
  FLOW PROCESS FROM NODE LR020829.0 TO NODE LR020829.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020829.0 TO NODE LR020852.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1465.00  DOWNSTREAM(FEET) =  1413.00
  FLOW LENGTH(FEET) =  2003.77   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  24.00   GIVEN BOX HEIGHT(FEET) =   5.00
  FLOWDEPTH IN BOX IS  3.72 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  34.29
  BOX-FLOW(CFS) =   3060.23
  BOX-FLOW TRAVEL TIME(MIN.) =   0.97    Tc(MIN.) =  28.92
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20852.00 = 24422.29 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020852.0 TO NODE LR020852.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =    3060.23    Tc(MIN.) =  28.92
  AREA-AVERAGED Fm(INCH/HR) =  0.50   Ybar = 0.52
  TOTAL AREA(ACRES) =    2763.54

****************************************************************************
  FLOW PROCESS FROM NODE LR020830.0 TO NODE LR020831.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   814.59
  ELEVATION DATA: UPSTREAM(FEET) =   1490.00  DOWNSTREAM(FEET) =   1475.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.868
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.518
```

```
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        6.12      0.75      0.60    56   13.37
  COMMERCIAL                 B        1.79      0.75      0.10    56    9.87
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.49
  SUBAREA RUNOFF(CFS) =     22.45
  TOTAL AREA(ACRES) =      7.91   PEAK FLOW RATE(CFS) =     22.45

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020831.0 TO NODE LR020832.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1475.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1464.00
  FLOW LENGTH(FEET) =   301.44   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  72.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  72.0 INCH PIPE IS   8.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.51
  PIPE-FLOW(CFS) =     22.45
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.43    Tc(MIN.) =  10.29
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.430
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        7.31      0.75      0.60    56
  COMMERCIAL                 B        3.62      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.43
  SUBAREA AREA(ACRES) =   10.93      SUBAREA RUNOFF(CFS) =   30.54
  EFFECTIVE AREA(ACRES) =     18.84    AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.46
  TOTAL AREA(ACRES) =     18.84        PEAK FLOW RATE(CFS) =     52.37

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  6.0       STREET HALFWIDTH(FEET) = 18.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
```



```
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   29.92
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.47
    HALFSTREET FLOOD WIDTH(FEET) =   17.10
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.92
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.30
  LONGEST FLOWPATH FROM NODE  20830.00 TO NODE  20832.00 =  1116.03 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020832.0 TO NODE LR020833.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1464.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1440.00
  FLOW LENGTH(FEET) =   991.27   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  72.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  72.0 INCH PIPE IS  13.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.93
  PIPE-FLOW(CFS) =     52.37
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.19    Tc(MIN.) =  11.48
  LONGEST FLOWPATH FROM NODE  20830.00 TO NODE  20833.00 =  2107.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020833.0 TO NODE LR020833.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  11.48
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.213
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       23.09      0.75      0.60    56
  COMMERCIAL                 B        9.26      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.46
  SUBAREA AREA(ACRES) =   32.35      SUBAREA RUNOFF(CFS) =   83.59
  EFFECTIVE AREA(ACRES) =     51.19   AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.46
  TOTAL AREA(ACRES) =     51.19       PEAK FLOW RATE(CFS) =     132.27

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020833.0 TO NODE LR020852.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1440.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1413.00
  FLOW LENGTH(FEET) =  1064.34   MANNING'S N =  0.013
```

```
  USER SPECIFIED PIPE DIAMETER(INCH) =  72.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  72.0 INCH PIPE IS  21.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.52
  PIPE-FLOW(CFS) =    132.27
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.96    Tc(MIN.) =  12.44
  LONGEST FLOWPATH FROM NODE  20830.00 TO NODE  20852.00 =  3171.64 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020852.0 TO NODE LR020852.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  12.44
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.062
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.67      0.75      0.60    56
  MOBILE HOME PARK           B        3.54      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
  SUBAREA AREA(ACRES) =    6.21      SUBAREA RUNOFF(CFS) =   15.44
  EFFECTIVE AREA(ACRES) =     57.40   AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.45
  TOTAL AREA(ACRES) =     57.40       PEAK FLOW RATE(CFS) =     140.76

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.59

****************************************************************************
  FLOW PROCESS FROM NODE LR020852.0 TO NODE LR020852.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  12.44
  RAINFALL INTENSITY(INCH/HR) =   3.06
  AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.45
  EFFECTIVE STREAM AREA(ACRES) =    57.40
  TOTAL STREAM AREA(ACRES) =    57.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    140.76

****************************************************************************
  FLOW PROCESS FROM NODE LR020840.0 TO NODE LR020841.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   708.14
  ELEVATION DATA: UPSTREAM(FEET) =   1630.00  DOWNSTREAM(FEET) =   1600.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
```



```
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.898
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.021
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        3.00      0.75      0.50    56   10.11
  COMMERCIAL                 B        5.71      0.75      0.10    56    7.90
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.09      0.75      0.60    56   10.70
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.28
  SUBAREA RUNOFF(CFS) =     33.63
  TOTAL AREA(ACRES) =      9.80   PEAK FLOW RATE(CFS) =     33.63

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020841.0 TO NODE LR020842.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1600.00  DOWNSTREAM(FEET) =   1580.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   218.02   CHANNEL SLOPE =  0.0917
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     33.63
  FLOW VELOCITY(FEET/SEC.) =   4.82   FLOW DEPTH(FEET) =   0.68
  TRAVEL TIME(MIN.) =   0.75   Tc(MIN.) =   8.65
  LONGEST FLOWPATH FROM NODE  20840.00 TO NODE  20842.00 =   926.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020842.0 TO NODE LR020842.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =   8.65
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.807
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B        3.16      0.75      0.25    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        2.28      0.75      0.50    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.36      0.75      0.60    56
  COMMERCIAL                 B        1.50      0.75      0.10    56
  PUBLIC PARK                B        0.63      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.38
  SUBAREA AREA(ACRES) =    8.93      SUBAREA RUNOFF(CFS) =   28.28
  EFFECTIVE AREA(ACRES) =     18.73   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.33
  TOTAL AREA(ACRES) =     18.73       PEAK FLOW RATE(CFS) =      60.02

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
```

```
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020842.0 TO NODE LR020843.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1580.00  DOWNSTREAM(FEET) =   1560.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   248.99   CHANNEL SLOPE =  0.0803
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     60.02
  FLOW VELOCITY(FEET/SEC.) =   5.35   FLOW DEPTH(FEET) =   0.86
  TRAVEL TIME(MIN.) =   0.78   Tc(MIN.) =   9.43
  LONGEST FLOWPATH FROM NODE  20840.00 TO NODE  20843.00 =  1175.15 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020843.0 TO NODE LR020843.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =   9.43
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.615
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK            B        4.09      0.75      0.25    56
  PUBLIC PARK                 B        1.15      0.75      0.85    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.11      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.39
  SUBAREA AREA(ACRES) =    5.35      SUBAREA RUNOFF(CFS) =   16.02
  EFFECTIVE AREA(ACRES) =     24.08   AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.34
  TOTAL AREA(ACRES) =     24.08       PEAK FLOW RATE(CFS) =      72.82

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020843.0 TO NODE LR020844.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1560.00  DOWNSTREAM(FEET) =   1557.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   185.64   CHANNEL SLOPE =  0.0162
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     72.82
  FLOW VELOCITY(FEET/SEC.) =   3.08   FLOW DEPTH(FEET) =   1.26
  TRAVEL TIME(MIN.) =   1.01   Tc(MIN.) =  10.43
  LONGEST FLOWPATH FROM NODE  20840.00 TO NODE  20844.00 =  1360.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020844.0 TO NODE LR020844.0 IS CODE =  81
```



```
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  10.43
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.402
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK            B        2.82      0.75      0.25    56
  PUBLIC PARK                 B        1.93      0.75      0.85    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.39      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =    5.14      SUBAREA RUNOFF(CFS) =   14.00
  EFFECTIVE AREA(ACRES) =     29.22   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.37
  TOTAL AREA(ACRES) =     29.22       PEAK FLOW RATE(CFS) =      82.20

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020844.0 TO NODE LR020845.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1557.00  DOWNSTREAM(FEET) =   1555.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   193.68   CHANNEL SLOPE =  0.0103
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     82.20
  FLOW VELOCITY(FEET/SEC.) =   2.68   FLOW DEPTH(FEET) =   1.43
  TRAVEL TIME(MIN.) =   1.20   Tc(MIN.) =  11.64
  LONGEST FLOWPATH FROM NODE  20840.00 TO NODE  20845.00 =  1554.47 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020845.0 TO NODE LR020845.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  11.64
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.186
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK            B        0.75      0.75      0.25    56
  PUBLIC PARK                 B        1.88      0.75      0.85    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.24      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA AREA(ACRES) =    2.87      SUBAREA RUNOFF(CFS) =    6.93
  EFFECTIVE AREA(ACRES) =     32.09   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.40
  TOTAL AREA(ACRES) =     32.09       PEAK FLOW RATE(CFS) =      83.46
```

```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020845.0 TO NODE LR020846.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1555.00  DOWNSTREAM(FEET) =   1552.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   263.74   CHANNEL SLOPE =  0.0114
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     83.46
  FLOW VELOCITY(FEET/SEC.) =   2.78   FLOW DEPTH(FEET) =   1.41
  TRAVEL TIME(MIN.) =   1.58   Tc(MIN.) =  13.22
  LONGEST FLOWPATH FROM NODE  20840.00 TO NODE  20846.00 =  1818.21 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020846.0 TO NODE LR020846.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  13.22
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.952
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B        0.82      0.75      0.25    56
  PUBLIC PARK                B        2.06      0.75      0.85    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.10      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    2.98      SUBAREA RUNOFF(CFS) =    6.56
  EFFECTIVE AREA(ACRES) =     35.07   AREA-AVERAGED Fm(INCH/HR) =  0.31
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.42
  TOTAL AREA(ACRES) =     35.07       PEAK FLOW RATE(CFS) =      83.46
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020846.0 TO NODE LR020847.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1552.00  DOWNSTREAM(FEET) =   1550.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   185.20   CHANNEL SLOPE =  0.0108
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     83.46
  FLOW VELOCITY(FEET/SEC.) =   2.74   FLOW DEPTH(FEET) =   1.42
  TRAVEL TIME(MIN.) =   1.12   Tc(MIN.) =  14.34
  LONGEST FLOWPATH FROM NODE  20840.00 TO NODE  20847.00 =  2003.41 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR020847.0 TO NODE LR020847.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  14.34
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.811
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B        2.48      0.75      0.25    56
  PUBLIC PARK                B        2.79      0.75      0.85    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.16      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.57
  SUBAREA AREA(ACRES) =    5.43      SUBAREA RUNOFF(CFS) =   11.66
  EFFECTIVE AREA(ACRES) =     40.50   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.44
  TOTAL AREA(ACRES) =     40.50       PEAK FLOW RATE(CFS) =      90.45

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020847.0 TO NODE LR020848.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1550.00  DOWNSTREAM(FEET) =   1540.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   371.70   CHANNEL SLOPE =  0.0269
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     90.45
  FLOW VELOCITY(FEET/SEC.) =   3.93   FLOW DEPTH(FEET) =   1.24
  TRAVEL TIME(MIN.) =   1.58   Tc(MIN.) =  15.92
  LONGEST FLOWPATH FROM NODE  20840.00 TO NODE  20848.00 =  2375.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020848.0 TO NODE LR020848.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  15.92
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.640
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B        0.62      0.75      0.25    56
  PUBLIC PARK                B        5.12      0.75      0.85    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.12      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.78
  SUBAREA AREA(ACRES) =    5.86      SUBAREA RUNOFF(CFS) =   10.84
  EFFECTIVE AREA(ACRES) =     46.36   AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.48
```

```
  TOTAL AREA(ACRES) =     46.36       PEAK FLOW RATE(CFS) =      95.08

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020848.0 TO NODE LR020849.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1540.00  DOWNSTREAM(FEET) =   1510.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   324.67   CHANNEL SLOPE =  0.0924
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     95.08
  FLOW VELOCITY(FEET/SEC.) =   6.31   FLOW DEPTH(FEET) =   1.00
  TRAVEL TIME(MIN.) =   0.86   Tc(MIN.) =  16.78
  LONGEST FLOWPATH FROM NODE  20840.00 TO NODE  20849.00 =  2699.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020849.0 TO NODE LR020849.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  16.78
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.559
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        1.44      0.75      0.85    56
  MOBILE HOME PARK           B        0.53      0.75      0.25    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.02      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    1.99      SUBAREA RUNOFF(CFS) =    3.66
  EFFECTIVE AREA(ACRES) =     48.35   AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.49
  TOTAL AREA(ACRES) =     48.35       PEAK FLOW RATE(CFS) =      95.32

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020849.0 TO NODE LR020850.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1510.00  DOWNSTREAM ELEVATION(FEET) = 1497.00
  STREET LENGTH(FEET) =   288.19   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
```



```
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.72

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     112.57
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.65
    HALFSTREET FLOOD WIDTH(FEET) =   25.64
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.11
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.29
  STREET FLOW TRAVEL TIME(MIN.) =   0.59   Tc(MIN.) =  17.37
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.506
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.94      0.75      0.60    56
  MOBILE HOME PARK           B        9.09      0.75      0.25    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        5.99      0.63      1.00    65
  PUBLIC PARK                B        1.08      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.68
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.57
  SUBAREA AREA(ACRES) =   18.10      SUBAREA RUNOFF(CFS) =   34.49
  EFFECTIVE AREA(ACRES) =     66.45    AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.51
  TOTAL AREA(ACRES) =     66.45       PEAK FLOW RATE(CFS) =     127.52

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.68   HALFSTREET FLOOD WIDTH(FEET) =  26.93
  FLOW VELOCITY(FEET/SEC.) =  8.37   DEPTH*VELOCITY(FT*FT/SEC.) =   5.68
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  288.2 FT WITH ELEVATION-DROP =  13.0 FT, IS   70.8 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20850.00
  LONGEST FLOWPATH FROM NODE  20840.00 TO NODE  20850.00 =  2987.97 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020850.0 TO NODE LR020851.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1497.00  DOWNSTREAM ELEVATION(FEET) = 1435.00
  STREET LENGTH(FEET) =  2619.33   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
```

```
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.86

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     198.34
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.87
  HALFSTREET FLOOD WIDTH(FEET) =   36.26
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.34
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.35
STREET FLOW TRAVEL TIME(MIN.) =   5.95   Tc(MIN.) =  23.32
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.100
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B       82.38      0.75      0.60    56
MOBILE HOME PARK           B       10.87      0.75      0.25    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.56
SUBAREA AREA(ACRES) =   93.25      SUBAREA RUNOFF(CFS) =  141.12
EFFECTIVE AREA(ACRES) =    159.70    AREA-AVERAGED Fm(INCH/HR) =  0.40
AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.54
TOTAL AREA(ACRES) =    159.70        PEAK FLOW RATE(CFS) =     244.36

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.93   HALFSTREET FLOOD WIDTH(FEET) =  39.44
FLOW VELOCITY(FEET/SEC.) =  7.68   DEPTH*VELOCITY(FT*FT/SEC.) =   7.13

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.86
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  12.62
PIPE-FLOW(CFS) =     75.02
PIPEFLOW TRAVEL TIME(MIN.) =   3.46    Tc(MIN.) =  20.83
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.247
SUBAREA AREA(ACRES) =   93.25      SUBAREA RUNOFF(CFS) =  153.48
TOTAL AREA(ACRES) =    159.70        PEAK FLOW RATE(CFS) =    265.53

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  190.51
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.85
  HALFSTREET FLOOD WIDTH(FEET) =   35.71
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.26
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.20
LONGEST FLOWPATH FROM NODE  20840.00 TO NODE  20851.00 =  5607.30 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR020851.0 TO NODE LR020852.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1435.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1413.00
  FLOW LENGTH(FEET) =  1025.18   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  40.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.55
  PIPE-FLOW(CFS) =    265.53
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.83    Tc(MIN.) =  21.66
  LONGEST FLOWPATH FROM NODE  20840.00 TO NODE  20852.00 =  6632.48 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020852.0 TO NODE LR020852.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.66
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.195
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       12.28      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   12.28      SUBAREA RUNOFF(CFS) =   19.30
  EFFECTIVE AREA(ACRES) =    171.98   AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.54
  TOTAL AREA(ACRES) =    171.98        PEAK FLOW RATE(CFS) =     277.33

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020852.0 TO NODE LR020852.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =  21.66
  RAINFALL INTENSITY(INCH/HR) =   2.19
  AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.74
  AREA-AVERAGED Ap =  0.54
  EFFECTIVE STREAM AREA(ACRES) =   171.98
  TOTAL STREAM AREA(ACRES) =   171.98
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    277.33
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
```

```
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1     3060.23   28.92     2763.54  LR020620.0
     2      140.76   12.44       57.40  LR020830.0
     3      277.33   21.66      171.98  LR020840.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.42;30M= 0.86;1H= 1.14;3H= 1.92;6H= 2.68;24H= 5.53
  S-GRAPH: VALLEY(DEV.)= 92.4%;VALLEY(UNDEV.)/DESERT=  7.6%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.48; LAG(HR) = 0.39; Fm(INCH/HR) = 0.49; Ybar = 0.51
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.87; 30M = 0.87; 1HR = 0.87;
  3HR = 0.98; 6HR = 0.99; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   2992.92
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20852.00 = 24422.29 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0210; Lca/L=0.4,n=.0188; Lca/L=0.5,n=.0173;Lca/L=0.6,n=.0161
  TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     711.43
  PEAK FLOW RATE(CFS) =   3209.39

****************************************************************************
  FLOW PROCESS FROM NODE LR020852.0 TO NODE LR020852.0 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20852.dna
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =   2992.92  TC(MIN.) =     28.92
  AREA-AVERAGED Fm(INCH/HR)=  0.49   Ybar =  0.51
  PEAK FLOW RATE(CFS)   =   3209.39
============================================================================
============================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

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**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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                          Analysis prepared by:

                           County of San Bernardino
                         Transportation Flood Control

                           Water Resources Division

--------------------------------------------------------------------------
  FILE NAME: LR0209ZZ.Z13
  TIME/DATE OF STUDY: 09:21 09/29/2004
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.2490

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)     (n)
===  =====  ========  =================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
```



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    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


**************************************************************************
  FLOW PROCESS FROM NODE LR020900.0 TO NODE LR020901.0 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   751.64
  ELEVATION DATA: UPSTREAM(FEET) =   1840.00  DOWNSTREAM(FEET) =   1798.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.372
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.580
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.85      0.75       0.90    56   12.26
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.85      0.75       0.60    56   10.37
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        8.78      0.75       0.70    56   11.03
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.71
  SUBAREA RUNOFF(CFS) =     28.78
  TOTAL AREA(ACRES) =     10.48   PEAK FLOW RATE(CFS) =     28.78

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.93; 1HR = 1.23; 3HR = 2.01; 6HR = 2.75; 24HR = 5.50

**************************************************************************
  FLOW PROCESS FROM NODE LR020901.0 TO NODE LR020902.0 IS CODE =  63
--------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
==========================================================================
  UPSTREAM ELEVATION(FEET) = 1798.00  DOWNSTREAM ELEVATION(FEET) = 1770.00
  STREET LENGTH(FEET) =   427.68   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
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  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.65

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      35.57
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.45
    HALFSTREET FLOOD WIDTH(FEET) =   16.32
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.39
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.89
  STREET FLOW TRAVEL TIME(MIN.) =   1.11   Tc(MIN.) =  11.49
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.368
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.43      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.53      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.46      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.78
  SUBAREA AREA(ACRES) =    5.42      SUBAREA RUNOFF(CFS) =   13.58
  EFFECTIVE AREA(ACRES) =     15.90    AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =     15.90        PEAK FLOW RATE(CFS) =      40.35

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.47   HALFSTREET FLOOD WIDTH(FEET) =  17.18
  FLOW VELOCITY(FEET/SEC.) =  6.57   DEPTH*VELOCITY(FT*FT/SEC.) =   3.09
  LONGEST FLOWPATH FROM NODE  20900.00 TO NODE  20902.00 =  1179.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020902.0 TO NODE LR020903.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1770.00  DOWNSTREAM ELEVATION(FEET) = 1758.00
  STREET LENGTH(FEET) =   465.31   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
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  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      46.31
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.55
    HALFSTREET FLOOD WIDTH(FEET) =   20.46
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.09
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.79
  STREET FLOW TRAVEL TIME(MIN.) =   1.52   Tc(MIN.) =  13.01
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.125
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.12      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.54      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.53      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.77
  SUBAREA AREA(ACRES) =    5.19      SUBAREA RUNOFF(CFS) =   11.90
  EFFECTIVE AREA(ACRES) =     21.09    AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.74
  TOTAL AREA(ACRES) =     21.09        PEAK FLOW RATE(CFS) =      48.78

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.56   HALFSTREET FLOOD WIDTH(FEET) =  20.82
  FLOW VELOCITY(FEET/SEC.) =  5.19   DEPTH*VELOCITY(FT*FT/SEC.) =   2.89
  LONGEST FLOWPATH FROM NODE  20900.00 TO NODE  20903.00 =  1644.63 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020903.0 TO NODE LR020904.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1758.00  DOWNSTREAM ELEVATION(FEET) = 1750.00
  STREET LENGTH(FEET) =   486.20   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      71.72
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
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    STREET FLOW DEPTH(FEET) =  0.66
    HALFSTREET FLOOD WIDTH(FEET) =   26.19
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.96
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.29
  STREET FLOW TRAVEL TIME(MIN.) =   1.63   Tc(MIN.) =  14.64
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.911
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        3.95      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.03      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       15.54      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.73
  SUBAREA AREA(ACRES) =   21.52      SUBAREA RUNOFF(CFS) =   45.85
  EFFECTIVE AREA(ACRES) =     42.61    AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =     42.61        PEAK FLOW RATE(CFS) =      90.57

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.93; 1HR = 1.23; 3HR = 2.01; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.71   HALFSTREET FLOOD WIDTH(FEET) =  28.63
  FLOW VELOCITY(FEET/SEC.) =  5.29   DEPTH*VELOCITY(FT*FT/SEC.) =   3.77
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  486.2 FT WITH ELEVATION-DROP =   8.0 FT, IS   55.9 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20904.00
  LONGEST FLOWPATH FROM NODE  20900.00 TO NODE  20904.00 =  2130.83 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020904.0 TO NODE LR020905.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1750.00  DOWNSTREAM ELEVATION(FEET) = 1715.00
  STREET LENGTH(FEET) =   660.51   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.69

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     114.40
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.64
    HALFSTREET FLOOD WIDTH(FEET) =   25.03
```



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    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.62
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.53
  STREET FLOW TRAVEL TIME(MIN.) =   1.28   Tc(MIN.) =  15.92
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.769
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        8.61      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.14      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       13.33      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.76
  SUBAREA AREA(ACRES) =   24.08      SUBAREA RUNOFF(CFS) =   47.64
  EFFECTIVE AREA(ACRES) =     66.69    AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.74
  TOTAL AREA(ACRES) =     66.69        PEAK FLOW RATE(CFS) =     132.75

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.67   HALFSTREET FLOOD WIDTH(FEET) =  26.50
  FLOW VELOCITY(FEET/SEC.) =  8.98   DEPTH*VELOCITY(FT*FT/SEC.) =   6.02
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  660.5 FT WITH ELEVATION-DROP =  35.0 FT, IS   67.2 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20905.00
  LONGEST FLOWPATH FROM NODE  20900.00 TO NODE  20905.00 =  2791.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020905.0 TO NODE LR020906.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1715.00  DOWNSTREAM ELEVATION(FEET) = 1670.00
  STREET LENGTH(FEET) =  1223.70   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.76

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     147.99
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.73
    HALFSTREET FLOOD WIDTH(FEET) =   29.67
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.07
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.92
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  STREET FLOW TRAVEL TIME(MIN.) =   2.53   Tc(MIN.) =  18.45
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.534
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        7.55      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.61      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        8.18      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.78
  SUBAREA AREA(ACRES) =   17.34      SUBAREA RUNOFF(CFS) =   30.47
  EFFECTIVE AREA(ACRES) =     84.03    AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.75
  TOTAL AREA(ACRES) =     84.03        PEAK FLOW RATE(CFS) =     149.16

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.73   HALFSTREET FLOOD WIDTH(FEET) =  29.73
  FLOW VELOCITY(FEET/SEC.) =  8.10   DEPTH*VELOCITY(FT*FT/SEC.) =   5.95
  LONGEST FLOWPATH FROM NODE  20900.00 TO NODE  20906.00 =  4015.04 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020906.0 TO NODE LR020920.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1670.00  DOWNSTREAM ELEVATION(FEET) = 1600.00
  STREET LENGTH(FEET) =  1513.04   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.71

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     164.00
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.73
    HALFSTREET FLOOD WIDTH(FEET) =   29.55
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.01
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.59
  STREET FLOW TRAVEL TIME(MIN.) =   2.80   Tc(MIN.) =  21.25
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.329
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
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  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.66      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        8.47      0.75      0.70    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        0.16      0.63      1.00    65
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        7.50      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.77
  SUBAREA AREA(ACRES) =   18.79      SUBAREA RUNOFF(CFS) =   29.68
  EFFECTIVE AREA(ACRES) =    102.82    AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.75
  TOTAL AREA(ACRES) =    102.82        PEAK FLOW RATE(CFS) =     163.27

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.73   HALFSTREET FLOOD WIDTH(FEET) =  29.49
  FLOW VELOCITY(FEET/SEC.) =  9.01   DEPTH*VELOCITY(FT*FT/SEC.) =   6.57

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.71
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.27
  PIPE-FLOW(CFS) =     44.86
  PIPEFLOW TRAVEL TIME(MIN.) =   1.77    Tc(MIN.) =  20.22
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.399
  SUBAREA AREA(ACRES) =   18.79      SUBAREA RUNOFF(CFS) =   30.87
  TOTAL AREA(ACRES) =    102.82        PEAK FLOW RATE(CFS) =    169.79

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  124.94
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.67
    HALFSTREET FLOOD WIDTH(FEET) =   26.56
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.42
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.65
  LONGEST FLOWPATH FROM NODE  20900.00 TO NODE  20920.00 =  5528.08 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020920.0 TO NODE LR020920.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  20.22
  RAINFALL INTENSITY(INCH/HR) =   2.40
  AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.75
```

```
  AREA-AVERAGED Ap =  0.75
  EFFECTIVE STREAM AREA(ACRES) =   102.82
  TOTAL STREAM AREA(ACRES) =   102.82
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    169.79

****************************************************************************
  FLOW PROCESS FROM NODE LR020910.0 TO NODE LR020911.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   679.60
  ELEVATION DATA: UPSTREAM(FEET) =   1825.00  DOWNSTREAM(FEET) =   1795.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.443
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.566
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.59      0.75      0.60    56   10.44
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        4.98      0.75      0.90    56   12.34
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.87
  SUBAREA RUNOFF(CFS) =     14.62
  TOTAL AREA(ACRES) =      5.57   PEAK FLOW RATE(CFS) =     14.62

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020911.0 TO NODE LR020912.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1795.00  DOWNSTREAM(FEET) =   1780.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   216.45   CHANNEL SLOPE =  0.0693
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  25.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     14.62
  FLOW VELOCITY(FEET/SEC.) =   3.13   FLOW DEPTH(FEET) =   0.43
  TRAVEL TIME(MIN.) =   1.15   Tc(MIN.) =  11.59
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20912.00 =   896.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020912.0 TO NODE LR020912.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  11.59
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.349
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
```



```
  "3-4 DWELLINGS/ACRE"       B        0.20      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        5.94      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.89
  SUBAREA AREA(ACRES) =    6.14      SUBAREA RUNOFF(CFS) =   14.83
  EFFECTIVE AREA(ACRES) =     11.71   AREA-AVERAGED Fm(INCH/HR) =  0.66
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.88
  TOTAL AREA(ACRES) =     11.71       PEAK FLOW RATE(CFS) =      28.36

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020912.0 TO NODE LR020913.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1780.00  DOWNSTREAM(FEET) =   1770.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   292.78   CHANNEL SLOPE =  0.0342
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  25.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     28.36
  FLOW VELOCITY(FEET/SEC.) =   2.85   FLOW DEPTH(FEET) =   0.63
  TRAVEL TIME(MIN.) =   1.71   Tc(MIN.) =  13.30
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20913.00 =  1188.83 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020913.0 TO NODE LR020913.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  13.30
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.084
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.69      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        9.60      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.88
  SUBAREA AREA(ACRES) =   10.29      SUBAREA RUNOFF(CFS) =   22.46
  EFFECTIVE AREA(ACRES) =     22.00   AREA-AVERAGED Fm(INCH/HR) =  0.66
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.88
  TOTAL AREA(ACRES) =     22.00       PEAK FLOW RATE(CFS) =      48.03

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020913.0 TO NODE LR020914.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
```

```
  ELEVATION DATA: UPSTREAM(FEET) =   1770.00  DOWNSTREAM(FEET) =   1740.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   493.77   CHANNEL SLOPE =  0.0608
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     48.03
  FLOW VELOCITY(FEET/SEC.) =   3.40   FLOW DEPTH(FEET) =   0.53
  TRAVEL TIME(MIN.) =   2.42   Tc(MIN.) =  15.72
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20914.00 =  1682.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020914.0 TO NODE LR020914.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  15.72
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.790
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        8.27      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.58      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.88
  SUBAREA AREA(ACRES) =    8.85      SUBAREA RUNOFF(CFS) =   16.98
  EFFECTIVE AREA(ACRES) =     30.85   AREA-AVERAGED Fm(INCH/HR) =  0.66
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.88
  TOTAL AREA(ACRES) =     30.85       PEAK FLOW RATE(CFS) =      59.18

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020914.0 TO NODE LR020915.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1740.00  DOWNSTREAM(FEET) =   1720.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   642.16   CHANNEL SLOPE =  0.0311
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     59.18
  FLOW VELOCITY(FEET/SEC.) =   2.77   FLOW DEPTH(FEET) =   0.65
  TRAVEL TIME(MIN.) =   3.86   Tc(MIN.) =  19.58
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20915.00 =  2324.76 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020915.0 TO NODE LR020915.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  19.58
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.445
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```



```
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        3.54      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.59      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.86
  SUBAREA AREA(ACRES) =    4.13      SUBAREA RUNOFF(CFS) =    6.71
  EFFECTIVE AREA(ACRES) =     34.98   AREA-AVERAGED Fm(INCH/HR) =  0.66
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.88
  TOTAL AREA(ACRES) =     34.98       PEAK FLOW RATE(CFS) =      59.18
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020915.0 TO NODE LR020916.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1720.00  DOWNSTREAM ELEVATION(FEET) = 1700.00
  STREET LENGTH(FEET) =   683.96   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.81

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      75.93
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.62
    HALFSTREET FLOOD WIDTH(FEET) =   24.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.20
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.84
  STREET FLOW TRAVEL TIME(MIN.) =   1.84   Tc(MIN.) =  21.42
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.317
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.86      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       20.51      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.88
  SUBAREA AREA(ACRES) =   22.37      SUBAREA RUNOFF(CFS) =   33.48
  EFFECTIVE AREA(ACRES) =     57.35    AREA-AVERAGED Fm(INCH/HR) =  0.66
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.88
  TOTAL AREA(ACRES) =     57.35        PEAK FLOW RATE(CFS) =      85.77
```

```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.64   HALFSTREET FLOOD WIDTH(FEET) =  25.09
  FLOW VELOCITY(FEET/SEC.) =  6.44   DEPTH*VELOCITY(FT*FT/SEC.) =   4.13
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  684.0 FT WITH ELEVATION-DROP =  20.0 FT, IS   55.0 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20916.00
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20916.00 =  3008.72 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020916.0 TO NODE LR020917.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1700.00  DOWNSTREAM ELEVATION(FEET) = 1672.00
  STREET LENGTH(FEET) =   576.79   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      99.87
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.62
    HALFSTREET FLOOD WIDTH(FEET) =   24.18
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.04
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.01
  STREET FLOW TRAVEL TIME(MIN.) =   1.20   Tc(MIN.) =  22.61
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.243
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.43      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       16.04      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.85
  SUBAREA AREA(ACRES) =   19.47      SUBAREA RUNOFF(CFS) =   28.20
  EFFECTIVE AREA(ACRES) =     76.82    AREA-AVERAGED Fm(INCH/HR) =  0.65
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =     76.82        PEAK FLOW RATE(CFS) =     110.13

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
```



```
  DEPTH(FEET) = 0.64   HALFSTREET FLOOD WIDTH(FEET) =  25.09
  FLOW VELOCITY(FEET/SEC.) =  8.26   DEPTH*VELOCITY(FT*FT/SEC.) =   5.30
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  576.8 FT WITH ELEVATION-DROP =  28.0 FT, IS   54.6 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20917.00
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20917.00 =  3585.51 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020917.0 TO NODE LR020918.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1672.00  DOWNSTREAM ELEVATION(FEET) = 1655.00
  STREET LENGTH(FEET) =   727.03   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.89

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     123.60
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.78
    HALFSTREET FLOOD WIDTH(FEET) =   31.68
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.23
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.86
  STREET FLOW TRAVEL TIME(MIN.) =   1.95   Tc(MIN.) =  24.56
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.135
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       12.63      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        5.91      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   18.54      SUBAREA RUNOFF(CFS) =   26.94
  EFFECTIVE AREA(ACRES) =     95.36    AREA-AVERAGED Fm(INCH/HR) =  0.62
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     95.36        PEAK FLOW RATE(CFS) =     129.58

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.79   HALFSTREET FLOOD WIDTH(FEET) =  32.16
  FLOW VELOCITY(FEET/SEC.) =  6.33   DEPTH*VELOCITY(FT*FT/SEC.) =   5.00
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20918.00 =  4312.54 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR020918.0 TO NODE LR020919.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1655.00  DOWNSTREAM ELEVATION(FEET) = 1640.00
  STREET LENGTH(FEET) =   577.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.86

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     136.84
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.79
    HALFSTREET FLOOD WIDTH(FEET) =   32.23
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.66
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.27
  STREET FLOW TRAVEL TIME(MIN.) =   1.45   Tc(MIN.) =  26.01
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.063
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        9.91      0.75      0.60    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        0.10      0.63      1.00    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   10.01      SUBAREA RUNOFF(CFS) =   14.52
  EFFECTIVE AREA(ACRES) =    105.37    AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =    105.37        PEAK FLOW RATE(CFS) =     137.92

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.79   HALFSTREET FLOOD WIDTH(FEET) =  32.29
  FLOW VELOCITY(FEET/SEC.) =  6.69   DEPTH*VELOCITY(FT*FT/SEC.) =   5.30
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20919.00 =  4890.04 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020919.0 TO NODE LR020920.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1640.00  DOWNSTREAM ELEVATION(FEET) = 1600.00
```



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  STREET LENGTH(FEET) =  1346.52   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     165.93
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.82
    HALFSTREET FLOOD WIDTH(FEET) =   33.63
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.41
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.07
  STREET FLOW TRAVEL TIME(MIN.) =   3.03   Tc(MIN.) =  29.03
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.931
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.53      0.75      0.60    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B       10.24      0.63      1.00    65
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       33.53      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.72
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.89
  SUBAREA AREA(ACRES) =   48.30      SUBAREA RUNOFF(CFS) =   55.98
  EFFECTIVE AREA(ACRES) =    153.67    AREA-AVERAGED Fm(INCH/HR) =  0.62
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =    153.67        PEAK FLOW RATE(CFS) =     181.38

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.84   HALFSTREET FLOOD WIDTH(FEET) =  34.67
  FLOW VELOCITY(FEET/SEC.) =  7.62   DEPTH*VELOCITY(FT*FT/SEC.) =   6.40

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.84
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.43
  PIPE-FLOW(CFS) =     35.94
  PIPEFLOW TRAVEL TIME(MIN.) =   1.96    Tc(MIN.) =  27.97
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.974
  SUBAREA AREA(ACRES) =   48.30      SUBAREA RUNOFF(CFS) =   57.88
  TOTAL AREA(ACRES) =    153.67        PEAK FLOW RATE(CFS) =    187.44
```

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  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  151.50
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.80
    HALFSTREET FLOOD WIDTH(FEET) =   32.59
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.21
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.75
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20920.00 =  6236.56 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020920.0 TO NODE LR020920.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  27.97
  RAINFALL INTENSITY(INCH/HR) =   1.97
  AREA-AVERAGED Fm(INCH/HR) =  0.62
  AREA-AVERAGED Fp(INCH/HR) =  0.74
  AREA-AVERAGED Ap =  0.84
  EFFECTIVE STREAM AREA(ACRES) =   153.67
  TOTAL STREAM AREA(ACRES) =   153.67
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    187.44

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    169.79  20.22    2.399  0.75( 0.56) 0.75   102.8 LR020900.0
      2    187.44  27.97    1.974  0.74( 0.62) 0.84   153.7 LR020910.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    347.72  20.22    2.399  0.74( 0.59) 0.80   213.9 LR020900.0
      2    317.94  27.97    1.974  0.74( 0.60) 0.80   256.5 LR020910.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    347.72    Tc(MIN.) =    20.22
  EFFECTIVE AREA(ACRES) =   213.89   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =    256.49
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20920.00 =  6236.56 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020920.0 TO NODE LR020921.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1600.00
```



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  DOWNSTREAM NODE ELEVATION(FEET) =  1580.00
  FLOW LENGTH(FEET) =   766.09   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
  USER SPECIFIED PIPE SYSTEM UNDER PRESSURE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.08
  PIPE-FLOW(CFS) =    338.43
  PIPEFLOW TRAVEL TIME(MIN.) =   0.67    Tc(MIN.) =  20.88
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.353
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        0.05      0.63      1.00    65
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       11.48      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       56.14      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   67.67      SUBAREA RUNOFF(CFS) =  112.16
  EFFECTIVE AREA(ACRES) =    281.56    AREA-AVERAGED Fm(INCH/HR) =  0.57
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.77
  TOTAL AREA(ACRES) =    324.16        PEAK FLOW RATE(CFS) =    450.95

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.94; 1HR = 1.24; 3HR = 2.02; 6HR = 2.75; 24HR = 5.50

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 26.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  112.52
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.75
    HALFSTREET FLOOD WIDTH(FEET) =   30.15
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.27
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.70

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    450.95  20.88    2.353  0.74( 0.57) 0.77   281.6 LR020900.0
      2    399.93  28.56    1.950  0.74( 0.58) 0.78   324.2 LR020910.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    450.95  Tc(MIN.) =  20.88
  AREA-AVERAGED Fm(INCH/HR) =  0.57  AREA-AVERAGED Fp(INCH/HR) =  0.74
  AREA-AVERAGED Ap =  0.77  EFFECTIVE AREA(ACRES) =    281.56
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20921.00 =  7002.65 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR020921.0 TO NODE LR020922.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1580.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1560.00
  FLOW LENGTH(FEET) =  1453.35   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  75.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  75.0 INCH PIPE IS  51.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.12
  PIPE-FLOW(CFS) =    450.95
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.20    Tc(MIN.) =  22.09
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20922.00 =  8456.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020922.0 TO NODE LR020922.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  22.09
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.275
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B       10.56      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B       31.42      0.75      0.70    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"        B       17.53      0.75      0.50    56
  MOBILE HOME PARK            B       16.71      0.75      0.25    56
  COMMERCIAL                  B        2.07      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.53
  SUBAREA AREA(ACRES) =   78.29      SUBAREA RUNOFF(CFS) =  132.37
  EFFECTIVE AREA(ACRES) =    359.85   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.82
  TOTAL AREA(ACRES) =    402.45       PEAK FLOW RATE(CFS) =     539.86

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    561.90  22.17    2.270  0.74( 0.53) 0.72   359.9 LR020900.0
      2    490.58  29.87    1.898  0.74( 0.54) 0.73   402.4 LR020910.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    561.90  Tc(MIN.) =  22.17
  AREA-AVERAGED Fm(INCH/HR) =  0.53  AREA-AVERAGED Fp(INCH/HR) =  0.74
  AREA-AVERAGED Ap =  0.72  EFFECTIVE AREA(ACRES) =    359.85

****************************************************************************
  FLOW PROCESS FROM NODE LR020922.0 TO NODE LR020923.0 IS CODE =  33
```



```
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1560.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1490.00
  FLOW LENGTH(FEET) =  1505.73   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  USER SPECIFIED PIPE SYSTEM UNDER PRESSURE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  26.35
  PIPE-FLOW(CFS) =    517.82
  PIPEFLOW TRAVEL TIME(MIN.) =   0.95    Tc(MIN.) =  23.13
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.213
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"        B        6.04      0.75      0.50    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B       30.00      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.58
  SUBAREA AREA(ACRES) =   36.04      SUBAREA RUNOFF(CFS) =   57.63
  EFFECTIVE AREA(ACRES) =    395.89    AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.71
  TOTAL AREA(ACRES) =    438.49        PEAK FLOW RATE(CFS) =    601.21

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  6.0       STREET HALFWIDTH(FEET) = 18.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.69
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   83.40
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.60
    HALFSTREET FLOOD WIDTH(FEET) =   22.78
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.51
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.47

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    601.21  23.13    2.213  0.74( 0.53) 0.71   395.9 LR020900.0
      2    525.68  30.71    1.867  0.74( 0.53) 0.72   438.5 LR020910.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    601.21  Tc(MIN.) =  23.13
  AREA-AVERAGED Fm(INCH/HR) =  0.53  AREA-AVERAGED Fp(INCH/HR) =  0.74
```

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  AREA-AVERAGED Ap =  0.71  EFFECTIVE AREA(ACRES) =    395.89
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20923.00 =  9961.73 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020923.0 TO NODE LR020924.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1490.00  DOWNSTREAM(FEET) =  1440.00
  FLOW LENGTH(FEET) =  1358.44   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   4.00   GIVEN BOX HEIGHT(FEET) =   4.00
  *GIVEN BOX HEIGHT(FEET) =   4.00   ESTIMATED BOX BASEWIDTH(FEET) =    6.85
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  21.93
  BOX-FLOW(CFS) =    601.21
  BOX-FLOW TRAVEL TIME(MIN.) =   1.03    Tc(MIN.) =  24.16
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20924.00 = 11320.17 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020924.0 TO NODE LR020924.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  24.16
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.156
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        6.19      0.75      0.50    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       35.81      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.59
  SUBAREA AREA(ACRES) =   42.00      SUBAREA RUNOFF(CFS) =   64.94
  EFFECTIVE AREA(ACRES) =    437.89   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =    480.49       PEAK FLOW RATE(CFS) =     645.77

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020924.0 TO NODE LR020939.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1440.00  DOWNSTREAM(FEET) =  1409.00
  FLOW LENGTH(FEET) =  1153.84   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   4.00   GIVEN BOX HEIGHT(FEET) =   4.00
  *GIVEN BOX HEIGHT(FEET) =   4.00   ESTIMATED BOX BASEWIDTH(FEET) =    8.25
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  19.56
  BOX-FLOW(CFS) =    645.77
  BOX-FLOW TRAVEL TIME(MIN.) =   0.98    Tc(MIN.) =  25.14
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20939.00 = 12474.01 FEET.

****************************************************************************
```



```
  FLOW PROCESS FROM NODE LR020939.0 TO NODE LR020939.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  25.14
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.105
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        2.86      0.75      0.50    56
  SCHOOL                     B        0.48      0.75      0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       11.63      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.58
  SUBAREA AREA(ACRES) =   14.97      SUBAREA RUNOFF(CFS) =   22.50
  EFFECTIVE AREA(ACRES) =    452.86   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =    495.46       PEAK FLOW RATE(CFS) =     648.18

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020939.0 TO NODE LR020939.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  25.14
  RAINFALL INTENSITY(INCH/HR) =   2.10
  AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.69
  EFFECTIVE STREAM AREA(ACRES) =   452.86
  TOTAL STREAM AREA(ACRES) =   495.46
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    648.18

****************************************************************************
  FLOW PROCESS FROM NODE LR020930.0 TO NODE LR020931.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   975.69
  ELEVATION DATA: UPSTREAM(FEET) =   1650.00  DOWNSTREAM(FEET) =   1625.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.455
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.063
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        8.68      0.75      0.60    56   13.46
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
```

```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     20.42
  TOTAL AREA(ACRES) =      8.68   PEAK FLOW RATE(CFS) =     20.42

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020931.0 TO NODE LR020932.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1625.00  DOWNSTREAM ELEVATION(FEET) = 1610.00
  STREET LENGTH(FEET) =   500.18   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.80

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      22.12
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.44
    HALFSTREET FLOOD WIDTH(FEET) =   15.77
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.24
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.87
  STREET FLOW TRAVEL TIME(MIN.) =   1.96   Tc(MIN.) =  15.42
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.822
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.59      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    1.59      SUBAREA RUNOFF(CFS) =    3.40
  EFFECTIVE AREA(ACRES) =     10.27    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     10.27        PEAK FLOW RATE(CFS) =      21.94

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.44   HALFSTREET FLOOD WIDTH(FEET) =  15.77
  FLOW VELOCITY(FEET/SEC.) =  4.21   DEPTH*VELOCITY(FT*FT/SEC.) =   1.86
  LONGEST FLOWPATH FROM NODE  20930.00 TO NODE  20932.00 =  1475.87 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020932.0 TO NODE LR020933.0 IS CODE =  63
----------------------------------------------------------------------------
```



```
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1610.00  DOWNSTREAM ELEVATION(FEET) = 1560.00
  STREET LENGTH(FEET) =  1367.05   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.76

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      54.97
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.55
    HALFSTREET FLOOD WIDTH(FEET) =   20.39
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.07
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.33
  STREET FLOW TRAVEL TIME(MIN.) =   3.75   Tc(MIN.) =  19.17
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.477
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       12.11      0.75      0.60    56
  SCHOOL                     B       22.59      0.75      0.60    56
  PUBLIC PARK                B        1.47      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.61
  SUBAREA AREA(ACRES) =   36.17      SUBAREA RUNOFF(CFS) =   65.77
  EFFECTIVE AREA(ACRES) =     46.44    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.61
  TOTAL AREA(ACRES) =     46.44        PEAK FLOW RATE(CFS) =      84.51

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.62   HALFSTREET FLOOD WIDTH(FEET) =  23.93
  FLOW VELOCITY(FEET/SEC.) =  6.93   DEPTH*VELOCITY(FT*FT/SEC.) =   4.29
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1367.1 FT WITH ELEVATION-DROP =  50.0 FT, IS   81.1 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20933.00
  LONGEST FLOWPATH FROM NODE  20930.00 TO NODE  20933.00 =  2842.92 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020933.0 TO NODE LR020934.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1560.00
```

```
  DOWNSTREAM NODE ELEVATION(FEET) =  1510.00
  FLOW LENGTH(FEET) =  1450.00   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  19.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.93
  PIPE-FLOW(CFS) =     84.51
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.28    Tc(MIN.) =  20.45
  LONGEST FLOWPATH FROM NODE  20930.00 TO NODE  20934.00 =  4292.92 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020934.0 TO NODE LR020934.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  20.45
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.383
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       26.74      0.75      0.60    56
  PUBLIC PARK                B        9.16      0.75      0.85    56
  SCHOOL                     B        6.76      0.75      0.60    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        6.64      0.63      1.00    65
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.77      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.73
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   52.07      SUBAREA RUNOFF(CFS) =   87.82
  EFFECTIVE AREA(ACRES) =     98.51   AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.66
  TOTAL AREA(ACRES) =     98.51       PEAK FLOW RATE(CFS) =     168.40

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020934.0 TO NODE LR020935.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1510.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1485.00
  FLOW LENGTH(FEET) =   871.47   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  27.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  21.00
  PIPE-FLOW(CFS) =    168.40
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.69    Tc(MIN.) =  21.14
  LONGEST FLOWPATH FROM NODE  20930.00 TO NODE  20935.00 =  5164.39 FEET.

****************************************************************************
```



```
  FLOW PROCESS FROM NODE LR020935.0 TO NODE LR020935.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.14
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.336
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       67.33      0.75      0.60    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        8.70      0.63      1.00    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.73
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.65
  SUBAREA AREA(ACRES) =   76.03      SUBAREA RUNOFF(CFS) =  127.69
  EFFECTIVE AREA(ACRES) =    174.54   AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.65
  TOTAL AREA(ACRES) =    174.54       PEAK FLOW RATE(CFS) =     291.91

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020935.0 TO NODE LR020936.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1485.00  DOWNSTREAM(FEET) =  1465.00
  FLOW LENGTH(FEET) =   799.10   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   3.00   GIVEN BOX HEIGHT(FEET) =   6.00
  *GIVEN BOX HEIGHT(FEET) =   6.00   ESTIMATED BOX BASEWIDTH(FEET) =    3.10
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  15.71
  BOX-FLOW(CFS) =    291.91
  BOX-FLOW TRAVEL TIME(MIN.) =   0.85    Tc(MIN.) =  21.99
  LONGEST FLOWPATH FROM NODE  20930.00 TO NODE  20936.00 =  5963.49 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020936.0 TO NODE LR020936.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.99
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.281
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B      101.89      0.75      0.60    56
  COMMERCIAL                 B        1.19      0.75      0.10    56
  MOBILE HOME PARK           B       18.61      0.75      0.25    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        2.78      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.54
  SUBAREA AREA(ACRES) =  124.47      SUBAREA RUNOFF(CFS) =  210.24
  EFFECTIVE AREA(ACRES) =    299.01   AREA-AVERAGED Fm(INCH/HR) =  0.45
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  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.61
  TOTAL AREA(ACRES) =    299.01       PEAK FLOW RATE(CFS) =     493.60

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020936.0 TO NODE LR020937.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1465.00  DOWNSTREAM(FEET) =  1440.00
  FLOW LENGTH(FEET) =   712.54   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   4.00   GIVEN BOX HEIGHT(FEET) =   4.00
  *GIVEN BOX HEIGHT(FEET) =   4.00   ESTIMATED BOX BASEWIDTH(FEET) =    5.97
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  20.67
  BOX-FLOW(CFS) =    493.60
  BOX-FLOW TRAVEL TIME(MIN.) =   0.57    Tc(MIN.) =  22.56
  LONGEST FLOWPATH FROM NODE  20930.00 TO NODE  20937.00 =  6676.03 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020937.0 TO NODE LR020937.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  22.56
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.246
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        6.69      0.75      0.60    56
  MOBILE HOME PARK           B       28.27      0.75      0.25    56
  COMMERCIAL                 B        1.13      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.31
  SUBAREA AREA(ACRES) =   36.09      SUBAREA RUNOFF(CFS) =   65.42
  EFFECTIVE AREA(ACRES) =    335.10   AREA-AVERAGED Fm(INCH/HR) =  0.42
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.57
  TOTAL AREA(ACRES) =    335.10       PEAK FLOW RATE(CFS) =     549.59

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020937.0 TO NODE LR020938.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1440.00  DOWNSTREAM(FEET) =  1415.00
  FLOW LENGTH(FEET) =   983.49   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   4.00   GIVEN BOX HEIGHT(FEET) =   4.00
  *GIVEN BOX HEIGHT(FEET) =   4.00   ESTIMATED BOX BASEWIDTH(FEET) =    7.40
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  18.57
  BOX-FLOW(CFS) =    549.59
  BOX-FLOW TRAVEL TIME(MIN.) =   0.88    Tc(MIN.) =  23.44
```



```
  LONGEST FLOWPATH FROM NODE  20930.00 TO NODE  20938.00 =  7659.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020938.0 TO NODE LR020938.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  23.44
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.195
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        3.30      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       20.77      0.75      0.60    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B       10.89      0.75      0.50    56
  MOBILE HOME PARK           B       29.98      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
  SUBAREA AREA(ACRES) =   64.94      SUBAREA RUNOFF(CFS) =  110.97
  EFFECTIVE AREA(ACRES) =    400.04   AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.54
  TOTAL AREA(ACRES) =    400.04       PEAK FLOW RATE(CFS) =     645.14

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020938.0 TO NODE LR020939.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1415.00  DOWNSTREAM(FEET) =  1409.00
  FLOW LENGTH(FEET) =   668.85   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   4.00   GIVEN BOX HEIGHT(FEET) =   4.00
  *GIVEN BOX HEIGHT(FEET) =   4.00   ESTIMATED BOX BASEWIDTH(FEET) =   13.09
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  12.32
  BOX-FLOW(CFS) =    645.14
  BOX-FLOW TRAVEL TIME(MIN.) =   0.90    Tc(MIN.) =  24.35
  LONGEST FLOWPATH FROM NODE  20930.00 TO NODE  20939.00 =  8328.37 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020939.0 TO NODE LR020939.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  24.35
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.146
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        6.87      0.75      0.50    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.91      0.75      0.60    56
  SCHOOL                     B        3.23      0.75      0.60    56
```

```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.54
  SUBAREA AREA(ACRES) =   11.01      SUBAREA RUNOFF(CFS) =   17.28
  EFFECTIVE AREA(ACRES) =    411.05   AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.54
  TOTAL AREA(ACRES) =    411.05       PEAK FLOW RATE(CFS) =     645.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020939.0 TO NODE LR020939.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  24.35
  RAINFALL INTENSITY(INCH/HR) =   2.15
  AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.74
  AREA-AVERAGED Ap =  0.54
  EFFECTIVE STREAM AREA(ACRES) =   411.05
  TOTAL STREAM AREA(ACRES) =   411.05
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    645.14

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    648.18  25.14    2.105  0.75( 0.51) 0.69   452.9 LR020900.0
      1    567.06  32.78    1.795  0.74( 0.52) 0.70   495.5 LR020910.0
      2    645.14  24.35    2.146  0.74( 0.40) 0.54   411.1 LR020930.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1   1289.01  24.35    2.146  0.74( 0.46) 0.62   849.6 LR020930.0
      2   1278.21  25.14    2.105  0.74( 0.46) 0.62   863.9 LR020900.0
      3   1082.45  32.78    1.795  0.74( 0.47) 0.63   906.5 LR020910.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   1289.01    Tc(MIN.) =    24.35
  EFFECTIVE AREA(ACRES) =   849.64   AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =    906.51
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20939.00 = 12474.01 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020939.0 TO NODE LR020939.0 IS CODE =  71
----------------------------------------------------------------------------
  >>>>>PEAK FLOW RATE ESTIMATOR CHANGED TO UNIT-HYDROGRAPH METHOD<<<<<
  >>>>>USING TIME-OF-CONCENTRATION OF LONGEST FLOWPATH<<<<<
============================================================================
```



```
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.46;30M= 0.95;1H= 1.25;3H= 2.03;6H= 2.75;24H= 5.50
  S-GRAPH: VALLEY(DEV.)= 81.6%;VALLEY(UNDEV.)/DESERT= 18.4%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.42; LAG(HR) = 0.34; Fm(INCH/HR) = 0.47; Ybar = 0.49
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    906.51
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20939.00 = 12474.01 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0307; Lca/L=0.4,n=.0275; Lca/L=0.5,n=.0253;Lca/L=0.6,n=.0236
  TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     226.79
  UNIT-HYDROGRAPH METHOD PEAK FLOW RATE(CFS) =   1330.47
  TOTAL PEAK FLOW RATE(CFS) =   1330.47 (SOURCE FLOW INCLUDED)
  RATIONAL METHOD PEAK FLOW RATE(CFS) =   1289.01
   (UPSTREAM NODE PEAK FLOW RATE(CFS) =   1289.01)
  PEAK FLOW RATE(CFS) USED =   1330.47

****************************************************************************
  FLOW PROCESS FROM NODE LR020939.0 TO NODE LR020940.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1409.00  DOWNSTREAM(FEET) =  1370.00
  FLOW LENGTH(FEET) =  2606.42   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   4.00   GIVEN BOX HEIGHT(FEET) =   4.00
  *GIVEN BOX HEIGHT(FEET) =   4.00   ESTIMATED BOX BASEWIDTH(FEET) =   19.79
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  16.81
  BOX-FLOW(CFS) =   1330.47
  BOX-FLOW TRAVEL TIME(MIN.) =   2.58    Tc(MIN.) =  27.73
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20940.00 = 15080.43 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020940.0 TO NODE LR020940.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  27.73
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.985
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  SCHOOL                     B       57.18      0.75       0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       27.41      0.75       0.60    56
  MOBILE HOME PARK           B        4.75      0.75       0.25    56
  COMMERCIAL                 B        4.99      0.75       0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.56
  SUBAREA AREA(ACRES) =   94.33
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.46;30M= 0.95;1H= 1.25;3H= 2.03;6H= 2.75;24H= 5.50
  S-GRAPH: VALLEY(DEV.)= 83.3%;VALLEY(UNDEV.)/DESERT= 16.7%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.46; LAG(HR) = 0.37; Fm(INCH/HR) = 0.46; Ybar = 0.49
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
```

```
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1000.84
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20940.00 = 15080.43 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0287; Lca/L=0.4,n=.0258; Lca/L=0.5,n=.0237;Lca/L=0.6,n=.0221
  TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     252.22
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1397.47
  TOTAL AREA(ACRES) =   1000.84       PEAK FLOW RATE(CFS) =    1397.47

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020940.0 TO NODE LR020940.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020852.0 TO NODE LR020852.0 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20852.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     3209.39    Tc(MIN.) =  28.92
  AREA-AVERAGED Fm(INCH/HR) =  0.49    Ybar = 0.51
  TOTAL AREA(ACRES) =    2992.92
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20852.00 = 24422.29 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020852.0 TO NODE LR020852.0 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     3209.39    Tc(MIN.) =  28.92
  AREA-AVERAGED Fm(INCH/HR) =  0.49    Ybar = 0.51
  TOTAL AREA(ACRES) =    2992.92
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20852.00 = 24422.29 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020852.0 TO NODE LR020852.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020852.0 TO NODE LR020940.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1413.00  DOWNSTREAM(FEET) =  1370.00
  FLOW LENGTH(FEET) =  2071.80   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  12.00   GIVEN BOX HEIGHT(FEET) =  10.00
```



```
  FLOWDEPTH IN BOX IS  7.76 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  34.46
  BOX-FLOW(CFS) =   3209.39
  BOX-FLOW TRAVEL TIME(MIN.) =   1.00    Tc(MIN.) =  29.93
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20940.00 = 26494.09 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020940.0 TO NODE LR020940.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     3209.39    Tc(MIN.) =  29.93
  AREA-AVERAGED Fm(INCH/HR) =  0.49    Ybar = 0.51
  TOTAL AREA(ACRES) =    2992.92
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20940.00 = 26494.09 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     1397.47    Tc(MIN.) =  27.73
  AREA-AVERAGED Fm(INCH/HR) =  0.46    Ybar = 0.49
  TOTAL AREA(ACRES) =    1000.84
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20940.00 = 15080.43 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.43;30M= 0.89;1H= 1.17;3H= 1.95;6H= 2.69;24H= 5.52
  S-GRAPH: VALLEY(DEV.)= 90.1%;VALLEY(UNDEV.)/DESERT=  9.9%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.50; LAG(HR) = 0.40; Fm(INCH/HR) = 0.48; Ybar = 0.51
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.82; 30M = 0.82; 1HR = 0.82;
  3HR = 0.97; 6HR = 0.99; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   3993.76
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20940.00 = 26494.09 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0203; Lca/L=0.4,n=.0182; Lca/L=0.5,n=.0167;Lca/L=0.6,n=.0156
  TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     952.07
  PEAK FLOW RATE(CFS) =    4007.76

****************************************************************************
  FLOW PROCESS FROM NODE LR020940.0 TO NODE LR020940.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020940.0 TO NODE LR020955.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1370.00  DOWNSTREAM(FEET) =  1360.00
  FLOW LENGTH(FEET) =   618.86   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  16.00   GIVEN BOX HEIGHT(FEET) =  10.00
  FLOWDEPTH IN BOX IS  7.52 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  33.31
  BOX-FLOW(CFS) =   4007.76
  BOX-FLOW TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =  30.24
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20955.00 = 27112.95 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR020955.0 TO NODE LR020955.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =    4007.76    Tc(MIN.) =  30.24
  AREA-AVERAGED Fm(INCH/HR) =  0.48   Ybar = 0.51
  TOTAL AREA(ACRES) =    3993.76

****************************************************************************
  FLOW PROCESS FROM NODE LR020950.0 TO NODE LR020951.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   667.18
  ELEVATION DATA: UPSTREAM(FEET) =   1438.00  DOWNSTREAM(FEET) =   1417.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.046
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.887
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  MOBILE HOME PARK           B        4.45      0.75      0.25    56    9.05
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.19      0.75      0.60    56   11.09
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.32
  SUBAREA RUNOFF(CFS) =     18.50
  TOTAL AREA(ACRES) =      5.64   PEAK FLOW RATE(CFS) =     18.50

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.59

****************************************************************************
  FLOW PROCESS FROM NODE LR020951.0 TO NODE LR020952.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1417.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1409.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   191.07
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.768
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.46      0.75      0.60    56
  MOBILE HOME PARK           B        2.56      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
```



```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.30
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     23.31
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.61
  AVERAGE FLOW DEPTH(FEET) =   0.55   FLOOD WIDTH(FEET) =   26.08
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.48   Tc(MIN.) =   9.53
  SUBAREA AREA(ACRES) =    3.02       SUBAREA RUNOFF(CFS) =    9.62
  EFFECTIVE AREA(ACRES) =    8.66     AREA-AVERAGED Fm(INCH/HR) =   0.24
  AREA-AVERAGED Fp(INCH/HR) =   0.75  AREA-AVERAGED Ap =   0.32
  TOTAL AREA(ACRES) =      8.66         PEAK FLOW RATE(CFS) =      27.52

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.57   FLOOD WIDTH(FEET) =   28.47
  FLOW VELOCITY(FEET/SEC.) =   6.74   DEPTH*VELOCITY(FT*FT/SEC) =   3.82
  LONGEST FLOWPATH FROM NODE  20950.00 TO NODE  20952.00 =   858.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020952.0 TO NODE LR020953.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1409.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1404.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   204.94
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.625
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.20      0.75      0.60    56
  MOBILE HOME PARK           B        1.83      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.39
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     32.07
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.40
  AVERAGE FLOW DEPTH(FEET) =   0.62   FLOOD WIDTH(FEET) =   35.34
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.63   Tc(MIN.) =  10.16
  SUBAREA AREA(ACRES) =    3.03       SUBAREA RUNOFF(CFS) =    9.09
  EFFECTIVE AREA(ACRES) =   11.69     AREA-AVERAGED Fm(INCH/HR) =   0.25
  AREA-AVERAGED Fp(INCH/HR) =   0.75  AREA-AVERAGED Ap =   0.34
  TOTAL AREA(ACRES) =     11.69         PEAK FLOW RATE(CFS) =      35.50

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.64   FLOOD WIDTH(FEET) =   36.98
  FLOW VELOCITY(FEET/SEC.) =   5.51   DEPTH*VELOCITY(FT*FT/SEC) =   3.52
  LONGEST FLOWPATH FROM NODE  20950.00 TO NODE  20953.00 =  1063.19 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020953.0 TO NODE LR020954.0 IS CODE =  92
```

```
------------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
==============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1404.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1400.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   260.93
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.438
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.52      0.75      0.60    56
  MOBILE HOME PARK           B        0.19      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.58
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     40.51
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.63
  AVERAGE FLOW DEPTH(FEET) =   0.70   FLOOD WIDTH(FEET) =   43.70
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.94   Tc(MIN.) =  11.10
  SUBAREA AREA(ACRES) =    3.71       SUBAREA RUNOFF(CFS) =   10.02
  EFFECTIVE AREA(ACRES) =   15.40     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.75  AREA-AVERAGED Ap =   0.39
  TOTAL AREA(ACRES) =     15.40         PEAK FLOW RATE(CFS) =      43.55

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.71   FLOOD WIDTH(FEET) =   45.04
  FLOW VELOCITY(FEET/SEC.) =   4.70   DEPTH*VELOCITY(FT*FT/SEC) =   3.33
  LONGEST FLOWPATH FROM NODE  20950.00 TO NODE  20954.00 =  1324.12 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020954.0 TO NODE LR020955.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
==============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1400.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1360.00
  FLOW LENGTH(FEET) =  1961.31   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  84.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  84.0 INCH PIPE IS  12.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.19
  PIPE-FLOW(CFS) =     43.55
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   2.68    Tc(MIN.) =  13.78
  LONGEST FLOWPATH FROM NODE  20950.00 TO NODE  20955.00 =  3285.43 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020955.0 TO NODE LR020955.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
```



```
==============================================================================
  MAINLINE Tc(MIN) =  13.78
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.019
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        0.07      0.75      0.85    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        7.87      0.75      0.60    56
  MOBILE HOME PARK           B        1.54      0.75      0.25    56
  COMMERCIAL                 B        9.50      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.32
  SUBAREA AREA(ACRES) =   18.98      SUBAREA RUNOFF(CFS) =   47.45
  EFFECTIVE AREA(ACRES) =     34.38   AREA-AVERAGED Fm(INCH/HR) =  0.27
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.35
  TOTAL AREA(ACRES) =     34.38       PEAK FLOW RATE(CFS) =      85.20

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020955.0 TO NODE LR020955.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  13.78
  RAINFALL INTENSITY(INCH/HR) =   3.02
  AREA-AVERAGED Fm(INCH/HR) =  0.27
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.35
  EFFECTIVE STREAM AREA(ACRES) =    34.38
  TOTAL STREAM AREA(ACRES) =    34.38
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     85.20
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1      4007.76   30.24     3993.76  LR020620.0
     2        85.20   13.78       34.38  LR020950.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.43;30M= 0.89;1H= 1.17;3H= 1.95;6H= 2.69;24H= 5.52
  S-GRAPH: VALLEY(DEV.)= 90.2%;VALLEY(UNDEV.)/DESERT=  9.8%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.50; LAG(HR) = 0.40; Fm(INCH/HR) = 0.48; Ybar = 0.50
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.82; 30M = 0.82; 1HR = 0.82;
  3HR = 0.97; 6HR = 0.99; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   4028.14
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20955.00 = 27112.95 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0201; Lca/L=0.4,n=.0180; Lca/L=0.5,n=.0166;Lca/L=0.6,n=.0155
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     962.44
  PEAK FLOW RATE(CFS) =   4001.50
```

```
    (UPSTREAM NODE PEAK FLOW RATE(CFS) =   4007.76)
  PEAK FLOW RATE(CFS) USED =   4007.76

****************************************************************************
  FLOW PROCESS FROM NODE LR020955.0 TO NODE LR020955.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020539.0 TO NODE LR020539.0 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20539.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     4124.36    Tc(MIN.) =  46.93
  AREA-AVERAGED Fm(INCH/HR) =  0.55    Ybar = 0.53
  TOTAL AREA(ACRES) =    5998.28
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20539.00 = 35104.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020539.0 TO NODE LR020539.0 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     4124.36    Tc(MIN.) =  46.93
  AREA-AVERAGED Fm(INCH/HR) =  0.55    Ybar = 0.53
  TOTAL AREA(ACRES) =    5998.28
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20539.00 = 35104.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020539.0 TO NODE LR020539.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020539.0 TO NODE LR020955.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1366.00  DOWNSTREAM(FEET) =   1360.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   385.80   CHANNEL SLOPE =  0.0156
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   6.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   4124.36
  FLOW VELOCITY(FEET/SEC.) =  29.35   FLOW DEPTH(FEET) =   5.90
  TRAVEL TIME(MIN.) =   0.22   Tc(MIN.) =  47.15
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20955.00 = 35490.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020955.0 TO NODE LR020955.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
```



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============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     4124.36    Tc(MIN.) =  47.15
  AREA-AVERAGED Fm(INCH/HR) =  0.55    Ybar = 0.53
  TOTAL AREA(ACRES) =    5998.28
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20955.00 = 35490.05 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     4007.76    Tc(MIN.) =  30.24
  AREA-AVERAGED Fm(INCH/HR) =  0.48    Ybar = 0.50
  TOTAL AREA(ACRES) =    4028.14
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20955.00 = 27112.95 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.44;30M= 0.91;1H= 1.20;3H= 2.00;6H= 2.76;24H= 6.20
  S-GRAPH: VALLEY(DEV.)= 68.9%;VALLEY(UNDEV.)/DESERT= 31.1%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.79; LAG(HR) = 0.63; Fm(INCH/HR) = 0.52; Ybar = 0.52
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.67; 30M = 0.68; 1HR = 0.68;
  3HR = 0.94; 6HR = 0.97; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  10026.42
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20955.00 = 35490.05 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0281; Lca/L=0.4,n=.0252; Lca/L=0.5,n=.0231;Lca/L=0.6,n=.0216
  TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =    2535.53
  PEAK FLOW RATE(CFS) =    6161.71

****************************************************************************
  FLOW PROCESS FROM NODE LR020955.0 TO NODE LR020955.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020955.0 TO NODE LR020956.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1360.00  DOWNSTREAM(FEET) =  1350.00
  FLOW LENGTH(FEET) =   666.58   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  23.00   GIVEN BOX HEIGHT(FEET) =  10.00
  FLOWDEPTH IN BOX IS  7.51 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  35.66
  BOX-FLOW(CFS) =   6161.71
  BOX-FLOW TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =  47.46
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20956.00 = 36156.63 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020956.0 TO NODE LR020956.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  47.46
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.438
  SUBAREA LOSS RATE DATA(AMC  II):
```

```
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        5.80      0.75       0.60    56
 COMMERCIAL                 B       17.13      0.75       0.10    56
 PUBLIC PARK                B        0.39      0.75       0.85    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.24
 SUBAREA AREA(ACRES) =   23.32
 UNIT-HYDROGRAPH DATA:
 RAINFALL(INCH): 5M= 0.45;30M= 0.91;1H= 1.20;3H= 2.00;6H= 2.76;24H= 6.20
 S-GRAPH: VALLEY(DEV.)= 69.0%;VALLEY(UNDEV.)/DESERT= 31.0%
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
 Tc(HR) = 0.79; LAG(HR) = 0.63; Fm(INCH/HR) = 0.52; Ybar = 0.52
 USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
 DEPTH-AREA FACTORS: 5M = 0.67; 30M = 0.68; 1HR = 0.68;
 3HR = 0.94; 6HR = 0.97; 24HR= 0.98
 UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  10049.74
 LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20956.00 = 36156.63 FEET.
  EQUIVALENT BASIN FACTOR APPROXIMATIONS:
  Lca/L=0.3,n=.0278; Lca/L=0.4,n=.0249; Lca/L=0.5,n=.0229;Lca/L=0.6,n=.0214
 TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =    2543.95
 UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   6153.71
 TOTAL AREA(ACRES) =  10049.74       PEAK FLOW RATE(CFS) =    6161.71
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
 FLOW PROCESS FROM NODE LR020956.0 TO NODE LR020968.0 IS CODE =  48
----------------------------------------------------------------------------
 >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1350.00  DOWNSTREAM(FEET) =  1335.00
 FLOW LENGTH(FEET) =   926.11   MANNING'S N =  0.014
 GIVEN BOX BASEWIDTH(FEET) =  23.00   GIVEN BOX HEIGHT(FEET) =  10.00
 FLOWDEPTH IN BOX IS  7.31 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  36.64
 BOX-FLOW(CFS) =   6161.71
 BOX-FLOW TRAVEL TIME(MIN.) =   0.42    Tc(MIN.) =  47.88
 LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20968.00 = 37082.74 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020968.0 TO NODE LR020968.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  47.88
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.430
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        2.51      0.75       0.60    56
 COMMERCIAL                 B        3.07      0.75       0.10    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.32
```



```
 SUBAREA AREA(ACRES) =    5.58
 UNIT-HYDROGRAPH DATA:
 RAINFALL(INCH): 5M= 0.45;30M= 0.91;1H= 1.20;3H= 2.00;6H= 2.76;24H= 6.20
 S-GRAPH: VALLEY(DEV.)= 69.0%;VALLEY(UNDEV.)/DESERT= 31.0%
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
 Tc(HR) = 0.80; LAG(HR) = 0.64; Fm(INCH/HR) = 0.52; Ybar = 0.52
 USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
 DEPTH-AREA FACTORS: 5M = 0.67; 30M = 0.68; 1HR = 0.68;
 3HR = 0.94; 6HR = 0.97; 24HR= 0.98
 UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  10055.32
 LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20968.00 = 37082.74 FEET.
  EQUIVALENT BASIN FACTOR APPROXIMATIONS:
  Lca/L=0.3,n=.0274; Lca/L=0.4,n=.0246; Lca/L=0.5,n=.0226;Lca/L=0.6,n=.0211
 TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =    2545.79
 UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   6118.33
 TOTAL AREA(ACRES) =  10055.32       PEAK FLOW RATE(CFS) =    6161.71
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
 FLOW PROCESS FROM NODE LR020968.0 TO NODE LR020968.0 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 PEAK FLOW RATE(CFS) =    6161.71    Tc(MIN.) =  47.88
 AREA-AVERAGED Fm(INCH/HR) =  0.52   Ybar = 0.52
 TOTAL AREA(ACRES) =   10055.32

****************************************************************************
 FLOW PROCESS FROM NODE LR020960.0 TO NODE LR020961.0 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   935.10
 ELEVATION DATA: UPSTREAM(FEET) =   1380.00  DOWNSTREAM(FEET) =   1360.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.120
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.634
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        3.18      0.75       0.50    56   12.95
 COMMERCIAL                 B        4.70      0.75       0.10    56   10.12
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.91      0.75       0.60    56   13.72
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.30
 SUBAREA RUNOFF(CFS) =     26.99
 TOTAL AREA(ACRES) =      8.79   PEAK FLOW RATE(CFS) =     26.99

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
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  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020961.0 TO NODE LR020962.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1360.00  DOWNSTREAM ELEVATION(FEET) = 1359.00
  STREET LENGTH(FEET) =   280.72   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      32.84
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.66
    HALFSTREET FLOOD WIDTH(FEET) =   26.01
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.30
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.52
  STREET FLOW TRAVEL TIME(MIN.) =   2.03   Tc(MIN.) =  12.15
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.256
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        1.51      0.75      0.50    56
  COMMERCIAL                 B        2.33      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.44      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.29
  SUBAREA AREA(ACRES) =    4.28      SUBAREA RUNOFF(CFS) =   11.70
  EFFECTIVE AREA(ACRES) =     13.07    AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.30
  TOTAL AREA(ACRES) =     13.07        PEAK FLOW RATE(CFS) =      35.70

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.68   HALFSTREET FLOOD WIDTH(FEET) =  26.86
  FLOW VELOCITY(FEET/SEC.) =  2.35   DEPTH*VELOCITY(FT*FT/SEC.) =   1.59
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  280.7 FT WITH ELEVATION-DROP =   1.0 FT, IS   14.2 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20962.00
  LONGEST FLOWPATH FROM NODE  20960.00 TO NODE  20962.00 =  1215.82 FEET.

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  FLOW PROCESS FROM NODE LR020962.0 TO NODE LR020963.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1359.00  DOWNSTREAM ELEVATION(FEET) = 1358.50
  STREET LENGTH(FEET) =   189.10   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      40.40
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.74
    HALFSTREET FLOOD WIDTH(FEET) =   29.86
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.18
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.60
  STREET FLOW TRAVEL TIME(MIN.) =   1.45   Tc(MIN.) =  13.60
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.043
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        1.24      0.75      0.50    56
  COMMERCIAL                 B        1.91      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.56      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.31
  SUBAREA AREA(ACRES) =    3.71      SUBAREA RUNOFF(CFS) =    9.39
  EFFECTIVE AREA(ACRES) =     16.78    AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.30
  TOTAL AREA(ACRES) =     16.78        PEAK FLOW RATE(CFS) =      42.59

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.75   HALFSTREET FLOOD WIDTH(FEET) =  30.47
  FLOW VELOCITY(FEET/SEC.) =  2.21   DEPTH*VELOCITY(FT*FT/SEC.) =   1.65
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  189.1 FT WITH ELEVATION-DROP =   0.5 FT, IS   13.1 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20963.00
  LONGEST FLOWPATH FROM NODE  20960.00 TO NODE  20963.00 =  1404.92 FEET.

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  FLOW PROCESS FROM NODE LR020963.0 TO NODE LR020964.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
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 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
================================================================================
 UPSTREAM ELEVATION(FEET) = 1358.50  DOWNSTREAM ELEVATION(FEET) = 1358.00
 STREET LENGTH(FEET) =   201.59   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      46.87
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.78
   HALFSTREET FLOOD WIDTH(FEET) =   32.05
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.20
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.72
 STREET FLOW TRAVEL TIME(MIN.) =   1.53   Tc(MIN.) =  15.12
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.855
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        1.22      0.75      0.50    56
 COMMERCIAL                 B        1.94      0.75      0.10    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.45      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.30
 SUBAREA AREA(ACRES) =    3.61      SUBAREA RUNOFF(CFS) =    8.55
 EFFECTIVE AREA(ACRES) =     20.39    AREA-AVERAGED Fm(INCH/HR) =  0.22
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.30
 TOTAL AREA(ACRES) =     20.39        PEAK FLOW RATE(CFS) =      48.30

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.79   HALFSTREET FLOOD WIDTH(FEET) =  32.42
 FLOW VELOCITY(FEET/SEC.) =  2.22   DEPTH*VELOCITY(FT*FT/SEC.) =   1.75
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  201.6 FT WITH ELEVATION-DROP =   0.5 FT, IS   12.5 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20964.00
 LONGEST FLOWPATH FROM NODE  20960.00 TO NODE  20964.00 =  1606.51 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020964.0 TO NODE LR020965.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
================================================================================
 UPSTREAM ELEVATION(FEET) = 1358.00  DOWNSTREAM ELEVATION(FEET) = 1357.50
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 STREET LENGTH(FEET) =   201.59   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      52.48
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.81
   HALFSTREET FLOOD WIDTH(FEET) =   33.52
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.26
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.83
 STREET FLOW TRAVEL TIME(MIN.) =   1.49   Tc(MIN.) =  16.61
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.699
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       A        0.14      0.98      0.50    32
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        1.29      0.75      0.50    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.85      0.75      0.60    56
 COMMERCIAL                 B        1.55      0.75      0.10    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.76
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.36
 SUBAREA AREA(ACRES) =    3.83      SUBAREA RUNOFF(CFS) =    8.36
 EFFECTIVE AREA(ACRES) =     24.22    AREA-AVERAGED Fm(INCH/HR) =  0.23
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.31
 TOTAL AREA(ACRES) =     24.22        PEAK FLOW RATE(CFS) =      53.80

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.82   HALFSTREET FLOOD WIDTH(FEET) =  33.82
 FLOW VELOCITY(FEET/SEC.) =  2.28   DEPTH*VELOCITY(FT*FT/SEC.) =   1.86
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  201.6 FT WITH ELEVATION-DROP =   0.5 FT, IS   13.0 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20965.00
 LONGEST FLOWPATH FROM NODE  20960.00 TO NODE  20965.00 =  1808.10 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020965.0 TO NODE LR020966.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
================================================================================
 UPSTREAM ELEVATION(FEET) = 1357.50  DOWNSTREAM ELEVATION(FEET) = 1357.00
 STREET LENGTH(FEET) =   207.50   CURB HEIGHT(INCHES) =  6.0
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  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      58.43
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.84
    HALFSTREET FLOOD WIDTH(FEET) =   35.17
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.29
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.94
  STREET FLOW TRAVEL TIME(MIN.) =   1.51   Tc(MIN.) =  18.12
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.562
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        0.74      0.98      0.50    32
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.93      0.75      0.50    56
  COMMERCIAL                 B        2.70      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.82
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.25
  SUBAREA AREA(ACRES) =    4.37      SUBAREA RUNOFF(CFS) =    9.26
  EFFECTIVE AREA(ACRES) =     28.59    AREA-AVERAGED Fm(INCH/HR) =  0.23
  AREA-AVERAGED Fp(INCH/HR) =  0.76  AREA-AVERAGED Ap =  0.30
  TOTAL AREA(ACRES) =     28.59        PEAK FLOW RATE(CFS) =      60.07

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.85   HALFSTREET FLOOD WIDTH(FEET) =  35.53
  FLOW VELOCITY(FEET/SEC.) =  2.31   DEPTH*VELOCITY(FT*FT/SEC.) =   1.97
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  207.5 FT WITH ELEVATION-DROP =   0.5 FT, IS   15.0 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20966.00
  LONGEST FLOWPATH FROM NODE  20960.00 TO NODE  20966.00 =  2015.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020966.0 TO NODE LR020967.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1357.00  DOWNSTREAM ELEVATION(FEET) = 1356.00
  STREET LENGTH(FEET) =   341.55   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
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  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      66.33
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.85
    HALFSTREET FLOOD WIDTH(FEET) =   35.59
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.54
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.17
  STREET FLOW TRAVEL TIME(MIN.) =   2.24   Tc(MIN.) =  20.35
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.389
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        2.02      0.98      0.50    32
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.32      0.75      0.50    56
  COMMERCIAL                 A        0.04      0.98      0.10    32
  COMMERCIAL                 B        4.03      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.89
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.25
  SUBAREA AREA(ACRES) =    6.41      SUBAREA RUNOFF(CFS) =   12.51
  EFFECTIVE AREA(ACRES) =     35.00    AREA-AVERAGED Fm(INCH/HR) =  0.23
  AREA-AVERAGED Fp(INCH/HR) =  0.78  AREA-AVERAGED Ap =  0.29
  TOTAL AREA(ACRES) =     35.00        PEAK FLOW RATE(CFS) =      68.14

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.86   HALFSTREET FLOOD WIDTH(FEET) =  35.96
  FLOW VELOCITY(FEET/SEC.) =  2.56   DEPTH*VELOCITY(FT*FT/SEC.) =   2.20
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  341.5 FT WITH ELEVATION-DROP =   1.0 FT, IS   19.8 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20967.00
  LONGEST FLOWPATH FROM NODE  20960.00 TO NODE  20967.00 =  2357.15 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020967.0 TO NODE LR020968.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1356.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1335.00
  FLOW LENGTH(FEET) =  1730.15   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  23.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.11
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  PIPE-FLOW(CFS) =     68.14
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   2.54    Tc(MIN.) =  22.89
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.227
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       13.57      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.04      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.19
  SUBAREA AREA(ACRES) =   16.61      SUBAREA RUNOFF(CFS) =   31.15
  EFFECTIVE AREA(ACRES) =     51.61    AREA-AVERAGED Fm(INCH/HR) =  0.20
  AREA-AVERAGED Fp(INCH/HR) =  0.77  AREA-AVERAGED Ap =  0.26
  TOTAL AREA(ACRES) =     51.61        PEAK FLOW RATE(CFS) =     94.16

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 26.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   26.03
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.56
    HALFSTREET FLOOD WIDTH(FEET) =   19.88
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.14
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.75
  LONGEST FLOWPATH FROM NODE  20960.00 TO NODE  20968.00 =  4087.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020968.0 TO NODE LR020968.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  22.89
  RAINFALL INTENSITY(INCH/HR) =   2.23
  AREA-AVERAGED Fm(INCH/HR) =  0.20
  AREA-AVERAGED Fp(INCH/HR) =  0.77
  AREA-AVERAGED Ap =  0.26
  EFFECTIVE STREAM AREA(ACRES) =    51.61
  TOTAL STREAM AREA(ACRES) =    51.61
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     94.16
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
```



```
     1      6161.71   47.88    10055.32  LR020120.0
     2        94.16   22.89       51.61  LR020960.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.91;1H= 1.20;3H= 2.00;6H= 2.76;24H= 6.20
  S-GRAPH: VALLEY(DEV.)= 69.1%;VALLEY(UNDEV.)/DESERT= 30.9%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.80; LAG(HR) = 0.64; Fm(INCH/HR) = 0.52; Ybar = 0.52
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.67; 30M = 0.68; 1HR = 0.68;
  3HR = 0.94; 6HR = 0.97; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  10106.93
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20968.00 = 37082.74 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0274; Lca/L=0.4,n=.0246; Lca/L=0.5,n=.0226;Lca/L=0.6,n=.0211
  TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =    2563.85
  PEAK FLOW RATE(CFS) =   6154.68
    (UPSTREAM NODE PEAK FLOW RATE(CFS) =   6161.71)
  PEAK FLOW RATE(CFS) USED =   6161.71

****************************************************************************
  FLOW PROCESS FROM NODE LR020968.0 TO NODE LR020968.0 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20968.dna
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =  10106.93  TC(MIN.) =     47.88
  AREA-AVERAGED Fm(INCH/HR)=  0.52   Ybar =  0.52
  PEAK FLOW RATE(CFS)   =   6161.71
============================================================================
============================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

```
**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
         (c) Copyright 1983-2002 Advanced Engineering Software (aes)
             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                           County of San Bernardino
                         Transportation Flood Control

                           Water Resources Division

--------------------------------------------------------------------------
  FILE NAME: LR0210ZZ.Z13
  TIME/DATE OF STUDY: 09:22 09/29/2004
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.2500

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  =================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
```



```
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


**************************************************************************
  FLOW PROCESS FROM NODE LR021000.0 TO NODE LR021001.0 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   690.87
  ELEVATION DATA: UPSTREAM(FEET) =   1535.00  DOWNSTREAM(FEET) =   1518.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.815
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.314
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.92      0.75       0.60    56   11.82
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     15.27
  TOTAL AREA(ACRES) =      5.92   PEAK FLOW RATE(CFS) =     15.27

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

**************************************************************************
  FLOW PROCESS FROM NODE LR021001.0 TO NODE LR021002.0 IS CODE =  63
--------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
==========================================================================
  UPSTREAM ELEVATION(FEET) = 1518.00  DOWNSTREAM ELEVATION(FEET) = 1480.00
  STREET LENGTH(FEET) =   646.60   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
```

```
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.67

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      25.99
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.42
    HALFSTREET FLOOD WIDTH(FEET) =   14.76
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.66
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.38
  STREET FLOW TRAVEL TIME(MIN.) =   1.90   Tc(MIN.) =  13.72
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.030
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        9.22      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    9.22      SUBAREA RUNOFF(CFS) =   21.42
  EFFECTIVE AREA(ACRES) =     15.14    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     15.14        PEAK FLOW RATE(CFS) =      35.17

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.46   HALFSTREET FLOOD WIDTH(FEET) =  16.63
  FLOW VELOCITY(FEET/SEC.) =  6.10   DEPTH*VELOCITY(FT*FT/SEC.) =   2.80
  LONGEST FLOWPATH FROM NODE  21000.00 TO NODE  21002.00 =  1337.47 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021002.0 TO NODE LR021013.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1480.00  DOWNSTREAM(FEET) =   1433.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1375.46   CHANNEL SLOPE =  0.0342
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   1.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     35.17
  FLOW VELOCITY(FEET/SEC.) =   6.26   FLOW DEPTH(FEET) =   1.09
  TRAVEL TIME(MIN.) =   3.66   Tc(MIN.) =  17.38
  LONGEST FLOWPATH FROM NODE  21000.00 TO NODE  21013.00 =  2712.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021013.0 TO NODE LR021013.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.38
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.629
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
```



```
  "3-4 DWELLINGS/ACRE"       B        7.03      0.75      0.60    56
  SCHOOL                     B        7.98      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   15.01      SUBAREA RUNOFF(CFS) =   29.45
  EFFECTIVE AREA(ACRES) =     30.15   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     30.15       PEAK FLOW RATE(CFS) =      59.15

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021013.0 TO NODE LR021013.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  17.38
  RAINFALL INTENSITY(INCH/HR) =   2.63
  AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.60
  EFFECTIVE STREAM AREA(ACRES) =    30.15
  TOTAL STREAM AREA(ACRES) =    30.15
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     59.15

****************************************************************************
  FLOW PROCESS FROM NODE LR021010.0 TO NODE LR021011.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   911.60
  ELEVATION DATA: UPSTREAM(FEET) =   1490.00  DOWNSTREAM(FEET) =   1462.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.628
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.184
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        7.05      0.75      0.60    56   12.63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     17.36
  TOTAL AREA(ACRES) =      7.05   PEAK FLOW RATE(CFS) =     17.36

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021011.0 TO NODE LR021012.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
```

```
==========================================================================
  UPSTREAM ELEVATION(FEET) = 1462.00  DOWNSTREAM ELEVATION(FEET) = 1440.00
  STREET LENGTH(FEET) =   809.73   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.83

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      23.08
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.45
    HALFSTREET FLOOD WIDTH(FEET) =   16.40
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.11
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.87
  STREET FLOW TRAVEL TIME(MIN.) =   3.28   Tc(MIN.) =  15.91
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.772
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.37      0.75      0.60    56
  SCHOOL                     B        1.10      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    5.47      SUBAREA RUNOFF(CFS) =   11.44
  EFFECTIVE AREA(ACRES) =     12.52    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     12.52        PEAK FLOW RATE(CFS) =      26.18

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.47   HALFSTREET FLOOD WIDTH(FEET) =  17.26
  FLOW VELOCITY(FEET/SEC.) =  4.23   DEPTH*VELOCITY(FT*FT/SEC.) =   1.99
  LONGEST FLOWPATH FROM NODE  21010.00 TO NODE  21012.00 =  1721.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021012.0 TO NODE LR021013.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
==========================================================================
  UPSTREAM ELEVATION(FEET) = 1440.00  DOWNSTREAM ELEVATION(FEET) = 1433.00
  STREET LENGTH(FEET) =   312.07   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
```



```
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.88

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      28.76
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.50
    HALFSTREET FLOOD WIDTH(FEET) =   18.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.08
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.02
  STREET FLOW TRAVEL TIME(MIN.) =   1.27   Tc(MIN.) =  17.19
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.647
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.66      0.75      0.60    56
  SCHOOL                     B        1.95      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    2.61      SUBAREA RUNOFF(CFS) =    5.16
  EFFECTIVE AREA(ACRES) =     15.13    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     15.13        PEAK FLOW RATE(CFS) =      29.93

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.50   HALFSTREET FLOOD WIDTH(FEET) =  18.01
  FLOW VELOCITY(FEET/SEC.) =  4.14   DEPTH*VELOCITY(FT*FT/SEC.) =   2.07
  LONGEST FLOWPATH FROM NODE  21010.00 TO NODE  21013.00 =  2033.40 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021013.0 TO NODE LR021013.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==========================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  17.19
  RAINFALL INTENSITY(INCH/HR) =   2.65
  AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.60
  EFFECTIVE STREAM AREA(ACRES) =    15.13
  TOTAL STREAM AREA(ACRES) =    15.13
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     29.93

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     59.15  17.38    2.629  0.75( 0.45) 0.60    30.2 LR021000.0
      2     29.93  17.19    2.647  0.75( 0.45) 0.60    15.1 LR021010.0
```

```
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1     88.89  17.19    2.647  0.75( 0.45) 0.60    44.9 LR021010.0
      2     88.83  17.38    2.629  0.75( 0.45) 0.60    45.3 LR021000.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     88.89    Tc(MIN.) =    17.19
  EFFECTIVE AREA(ACRES) =    44.94   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     45.28
  LONGEST FLOWPATH FROM NODE  21000.00 TO NODE  21013.00 =  2712.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021013.0 TO NODE LR021014.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1433.00  DOWNSTREAM(FEET) =   1380.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1311.64   CHANNEL SLOPE =  0.0404
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     88.89
  FLOW VELOCITY(FEET/SEC.) =   8.32   FLOW DEPTH(FEET) =   1.38
  TRAVEL TIME(MIN.) =   2.63   Tc(MIN.) =  19.81
  LONGEST FLOWPATH FROM NODE  21000.00 TO NODE  21014.00 =  4024.57 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021014.0 TO NODE LR021014.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  19.81
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.430
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       19.47      0.75      0.60    56
  COMMERCIAL                 B        2.09      0.75      0.10    56
  MOBILE HOME PARK           B        0.23      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.55
  SUBAREA AREA(ACRES) =   21.79      SUBAREA RUNOFF(CFS) =   39.61
  EFFECTIVE AREA(ACRES) =     66.73   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.58
  TOTAL AREA(ACRES) =     67.07       PEAK FLOW RATE(CFS) =     119.74

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021014.0 TO NODE LR021015.0 IS CODE =  63
```



```
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1380.00  DOWNSTREAM ELEVATION(FEET) = 1345.00
  STREET LENGTH(FEET) =  1339.49   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     131.62
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.75
    HALFSTREET FLOOD WIDTH(FEET) =   30.28
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.90
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.15
  STREET FLOW TRAVEL TIME(MIN.) =   3.23   Tc(MIN.) =  23.05
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.219
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.31      0.75      0.60    56
  MOBILE HOME PARK           B        9.23      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.36
  SUBAREA AREA(ACRES) =   13.54      SUBAREA RUNOFF(CFS) =   23.75
  EFFECTIVE AREA(ACRES) =     80.27    AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.55
  TOTAL AREA(ACRES) =     80.61        PEAK FLOW RATE(CFS) =     130.84

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.74   HALFSTREET FLOOD WIDTH(FEET) =  30.22
  FLOW VELOCITY(FEET/SEC.) =  6.89   DEPTH*VELOCITY(FT*FT/SEC.) =   5.13
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1339.5 FT WITH ELEVATION-DROP =  35.0 FT, IS   35.9 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21015.00
  LONGEST FLOWPATH FROM NODE  21000.00 TO NODE  21015.00 =  5364.06 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021015.0 TO NODE LR021032.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1345.00  DOWNSTREAM ELEVATION(FEET) = 1332.00
```

```
  STREET LENGTH(FEET) =   945.30   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     138.22
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.84
    HALFSTREET FLOOD WIDTH(FEET) =   35.04
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.47
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.60
  STREET FLOW TRAVEL TIME(MIN.) =   2.88   Tc(MIN.) =  25.93
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.068
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.76      0.75      0.60    56
  SCHOOL                     B        3.85      0.75      0.60    56
  MOBILE HOME PARK           B        2.60      0.75      0.25    56
  PUBLIC PARK                B        0.44      0.75      0.85    56
  COMMERCIAL                 B        0.91      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.47
  SUBAREA AREA(ACRES) =    9.56      SUBAREA RUNOFF(CFS) =   14.77
  EFFECTIVE AREA(ACRES) =     89.83    AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.54
  TOTAL AREA(ACRES) =     90.17        PEAK FLOW RATE(CFS) =     134.66

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.83   HALFSTREET FLOOD WIDTH(FEET) =  34.68
  FLOW VELOCITY(FEET/SEC.) =  5.43   DEPTH*VELOCITY(FT*FT/SEC.) =   4.53
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  945.3 FT WITH ELEVATION-DROP =  13.0 FT, IS   26.6 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21032.00
  LONGEST FLOWPATH FROM NODE  21000.00 TO NODE  21032.00 =  6309.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021032.0 TO NODE LR021032.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  25.93
  RAINFALL INTENSITY(INCH/HR) =   2.07
```



```
  AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.54
  EFFECTIVE STREAM AREA(ACRES) =    89.83
  TOTAL STREAM AREA(ACRES) =    90.17
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    134.66

****************************************************************************
  FLOW PROCESS FROM NODE LR021020.0 TO NODE LR021021.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   732.03
  ELEVATION DATA: UPSTREAM(FEET) =   1442.00  DOWNSTREAM(FEET) =   1440.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.306
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.837
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.89      0.75      0.60    56   18.77
  MOBILE HOME PARK           B        4.31      0.75      0.25    56   15.31
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.36
  SUBAREA RUNOFF(CFS) =     14.34
  TOTAL AREA(ACRES) =      6.20   PEAK FLOW RATE(CFS) =     14.34

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021021.0 TO NODE LR021022.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1440.00  DOWNSTREAM ELEVATION(FEET) = 1433.00
  STREET LENGTH(FEET) =   186.35   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.76

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      20.03
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.42
    HALFSTREET FLOOD WIDTH(FEET) =   14.52
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.50
```

```
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.87
  STREET FLOW TRAVEL TIME(MIN.) =   0.69   Tc(MIN.) =  16.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.763
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B        4.18      0.75      0.25    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.81      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.31
  SUBAREA AREA(ACRES) =    4.99      SUBAREA RUNOFF(CFS) =   11.38
  EFFECTIVE AREA(ACRES) =     11.19    AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.33
  TOTAL AREA(ACRES) =     11.19        PEAK FLOW RATE(CFS) =      25.31

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.44   HALFSTREET FLOOD WIDTH(FEET) =  15.93
  FLOW VELOCITY(FEET/SEC.) =  4.76   DEPTH*VELOCITY(FT*FT/SEC.) =   2.12
  LONGEST FLOWPATH FROM NODE  21020.00 TO NODE  21022.00 =   918.38 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021022.0 TO NODE LR021023.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1433.00  DOWNSTREAM ELEVATION(FEET) = 1416.00
  STREET LENGTH(FEET) =   274.30   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.66

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      34.02
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.45
    HALFSTREET FLOOD WIDTH(FEET) =   16.24
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.17
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.78
  STREET FLOW TRAVEL TIME(MIN.) =   0.74   Tc(MIN.) =  16.74
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.689
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B        6.51      0.75      0.25    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.37      0.75      0.60    56
```



```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.31
  SUBAREA AREA(ACRES) =    7.88      SUBAREA RUNOFF(CFS) =   17.42
  EFFECTIVE AREA(ACRES) =     19.07    AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.32
  TOTAL AREA(ACRES) =     19.07        PEAK FLOW RATE(CFS) =      41.98

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.48   HALFSTREET FLOOD WIDTH(FEET) =  17.65
  FLOW VELOCITY(FEET/SEC.) =  6.49   DEPTH*VELOCITY(FT*FT/SEC.) =   3.11
  LONGEST FLOWPATH FROM NODE  21020.00 TO NODE  21023.00 =  1192.68 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021023.0 TO NODE LR021024.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1416.00  DOWNSTREAM ELEVATION(FEET) = 1402.00
  STREET LENGTH(FEET) =   250.39   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.68

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      49.43
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.51
    HALFSTREET FLOOD WIDTH(FEET) =   18.26
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.68
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.37
  STREET FLOW TRAVEL TIME(MIN.) =   0.62   Tc(MIN.) =  17.36
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.631
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B        6.35      0.75      0.25    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.47      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.27
  SUBAREA AREA(ACRES) =    6.82      SUBAREA RUNOFF(CFS) =   14.89
  EFFECTIVE AREA(ACRES) =     25.89    AREA-AVERAGED Fm(INCH/HR) =  0.23
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.31
  TOTAL AREA(ACRES) =     25.89        PEAK FLOW RATE(CFS) =      55.87

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
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  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.52   HALFSTREET FLOOD WIDTH(FEET) =  19.05
  FLOW VELOCITY(FEET/SEC.) =  6.99   DEPTH*VELOCITY(FT*FT/SEC.) =   3.64
  LONGEST FLOWPATH FROM NODE  21020.00 TO NODE  21024.00 =  1443.07 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021024.0 TO NODE LR021025.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1402.00  DOWNSTREAM ELEVATION(FEET) = 1390.00
  STREET LENGTH(FEET) =   390.63   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.80

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      63.20
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.58
    HALFSTREET FLOOD WIDTH(FEET) =   22.16
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.99
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.49
  STREET FLOW TRAVEL TIME(MIN.) =   1.09   Tc(MIN.) =  18.45
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.536
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.17      0.75      0.60    56
  MOBILE HOME PARK           B        3.23      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.45
  SUBAREA AREA(ACRES) =    7.40      SUBAREA RUNOFF(CFS) =   14.66
  EFFECTIVE AREA(ACRES) =     33.29    AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.34
  TOTAL AREA(ACRES) =     33.29        PEAK FLOW RATE(CFS) =      68.34

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.60   HALFSTREET FLOOD WIDTH(FEET) =  22.84
  FLOW VELOCITY(FEET/SEC.) =  6.12   DEPTH*VELOCITY(FT*FT/SEC.) =   3.65
  LONGEST FLOWPATH FROM NODE  21020.00 TO NODE  21025.00 =  1833.70 FEET.

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  FLOW PROCESS FROM NODE LR021025.0 TO NODE LR021026.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1390.00  DOWNSTREAM ELEVATION(FEET) = 1385.00
  STREET LENGTH(FEET) =   357.04   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      71.61
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.68
    HALFSTREET FLOOD WIDTH(FEET) =   26.99
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.68
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.18
  STREET FLOW TRAVEL TIME(MIN.) =   1.27   Tc(MIN.) =  19.72
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.437
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.32      0.75      0.60    56
  COMMERCIAL                 B        1.20      0.75      0.10    56
  MOBILE HOME PARK           B        0.81      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.33
  SUBAREA AREA(ACRES) =    3.33      SUBAREA RUNOFF(CFS) =    6.55
  EFFECTIVE AREA(ACRES) =     36.62    AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.34
  TOTAL AREA(ACRES) =     36.62        PEAK FLOW RATE(CFS) =      71.91

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.68   HALFSTREET FLOOD WIDTH(FEET) =  27.05
  FLOW VELOCITY(FEET/SEC.) =  4.68   DEPTH*VELOCITY(FT*FT/SEC.) =   3.19
  LONGEST FLOWPATH FROM NODE  21020.00 TO NODE  21026.00 =  2190.74 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021026.0 TO NODE LR021027.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1385.00  DOWNSTREAM ELEVATION(FEET) = 1374.00
  STREET LENGTH(FEET) =   355.39   CURB HEIGHT(INCHES) =  6.0
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  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.80

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      77.55
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.62
    HALFSTREET FLOOD WIDTH(FEET) =   23.93
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.36
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.94
  STREET FLOW TRAVEL TIME(MIN.) =   0.93   Tc(MIN.) =  20.65
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.370
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.67      0.75      0.60    56
  COMMERCIAL                 B        3.22      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.33
  SUBAREA AREA(ACRES) =    5.89      SUBAREA RUNOFF(CFS) =   11.27
  EFFECTIVE AREA(ACRES) =     42.51    AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.34
  TOTAL AREA(ACRES) =     42.51        PEAK FLOW RATE(CFS) =      80.99

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.63   HALFSTREET FLOOD WIDTH(FEET) =  24.30
  FLOW VELOCITY(FEET/SEC.) =  6.46   DEPTH*VELOCITY(FT*FT/SEC.) =   4.04
  LONGEST FLOWPATH FROM NODE  21020.00 TO NODE  21027.00 =  2546.13 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021027.0 TO NODE LR021028.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1374.00  DOWNSTREAM ELEVATION(FEET) = 1368.00
  STREET LENGTH(FEET) =   309.73   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
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  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      85.76
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.68
    HALFSTREET FLOOD WIDTH(FEET) =   27.17
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.53
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.78
  STREET FLOW TRAVEL TIME(MIN.) =   0.93   Tc(MIN.) =  21.58
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.308
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.72      0.75      0.60    56
  COMMERCIAL                 B        2.05      0.75      0.10    56
  MOBILE HOME PARK           B        0.45      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.37
  SUBAREA AREA(ACRES) =    5.22      SUBAREA RUNOFF(CFS) =    9.53
  EFFECTIVE AREA(ACRES) =     47.73    AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.34
  TOTAL AREA(ACRES) =     47.73        PEAK FLOW RATE(CFS) =      88.15

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.69   HALFSTREET FLOOD WIDTH(FEET) =  27.47
  FLOW VELOCITY(FEET/SEC.) =  5.57   DEPTH*VELOCITY(FT*FT/SEC.) =   3.84
  LONGEST FLOWPATH FROM NODE  21020.00 TO NODE  21028.00 =  2855.86 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021028.0 TO NODE LR021029.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1368.00  DOWNSTREAM ELEVATION(FEET) = 1363.00
  STREET LENGTH(FEET) =   301.04   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      92.77
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
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    STREET FLOW DEPTH(FEET) =  0.72
    HALFSTREET FLOOD WIDTH(FEET) =   28.88
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.33
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.82
  STREET FLOW TRAVEL TIME(MIN.) =   0.94   Tc(MIN.) =  22.53
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.250
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.13      0.75      0.60    56
  COMMERCIAL                 B        2.11      0.75      0.10    56
  MOBILE HOME PARK           B        0.89      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.33
  SUBAREA AREA(ACRES) =    5.13      SUBAREA RUNOFF(CFS) =    9.24
  EFFECTIVE AREA(ACRES) =     52.86    AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.34
  TOTAL AREA(ACRES) =     52.86        PEAK FLOW RATE(CFS) =      94.88

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.72   HALFSTREET FLOOD WIDTH(FEET) =  29.12
  FLOW VELOCITY(FEET/SEC.) =  5.36   DEPTH*VELOCITY(FT*FT/SEC.) =   3.87
  LONGEST FLOWPATH FROM NODE  21020.00 TO NODE  21029.00 =  3156.90 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021029.0 TO NODE LR021030.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1363.00  DOWNSTREAM ELEVATION(FEET) = 1350.00
  STREET LENGTH(FEET) =   360.35   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.76

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     128.19
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.70
    HALFSTREET FLOOD WIDTH(FEET) =   28.15
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.73
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.44
  STREET FLOW TRAVEL TIME(MIN.) =   0.78   Tc(MIN.) =  23.30
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.205
  SUBAREA LOSS RATE DATA(AMC  II):
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   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        9.68      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       27.42      0.75      0.60    56
  MOBILE HOME PARK           B        2.60      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.46
  SUBAREA AREA(ACRES) =   39.70      SUBAREA RUNOFF(CFS) =   66.61
  EFFECTIVE AREA(ACRES) =     92.56    AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.39
  TOTAL AREA(ACRES) =     92.56        PEAK FLOW RATE(CFS) =     159.34

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.75   HALFSTREET FLOOD WIDTH(FEET) =  30.65
  FLOW VELOCITY(FEET/SEC.) =  8.16   DEPTH*VELOCITY(FT*FT/SEC.) =   6.15
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  360.4 FT WITH ELEVATION-DROP =  13.0 FT, IS  161.8 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21030.00
  LONGEST FLOWPATH FROM NODE  21020.00 TO NODE  21030.00 =  3517.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021030.0 TO NODE LR021031.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1350.00  DOWNSTREAM(FEET) =  1340.00
  FLOW LENGTH(FEET) =   474.31   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   6.00   GIVEN BOX HEIGHT(FEET) =   2.50
  FLOWDEPTH IN BOX IS  1.65 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  16.07
  BOX-FLOW(CFS) =    159.34
  BOX-FLOW TRAVEL TIME(MIN.) =   0.49    Tc(MIN.) =  23.79
  LONGEST FLOWPATH FROM NODE  21020.00 TO NODE  21031.00 =  3991.56 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021031.0 TO NODE LR021031.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  23.79
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.177
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.14      0.75      0.60    56
  COMMERCIAL                 B        3.35      0.75      0.10    56
  SCHOOL                     B        0.63      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.33
  SUBAREA AREA(ACRES) =    6.12      SUBAREA RUNOFF(CFS) =   10.65
  EFFECTIVE AREA(ACRES) =     98.68   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.39
  TOTAL AREA(ACRES) =     98.68       PEAK FLOW RATE(CFS) =     167.70
```

```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.59

****************************************************************************
  FLOW PROCESS FROM NODE LR021031.0 TO NODE LR021032.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1340.00  DOWNSTREAM(FEET) =  1332.00
  FLOW LENGTH(FEET) =   772.50   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   6.00   GIVEN BOX HEIGHT(FEET) =   2.50
  *GIVEN BOX HEIGHT(FEET) =   2.50   ESTIMATED BOX BASEWIDTH(FEET) =    7.10
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =   9.45
  BOX-FLOW(CFS) =    167.70
  BOX-FLOW TRAVEL TIME(MIN.) =   1.36    Tc(MIN.) =  25.16
  LONGEST FLOWPATH FROM NODE  21020.00 TO NODE  21032.00 =  4764.06 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021032.0 TO NODE LR021032.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  25.16
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.106
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.65      0.75      0.60    56
  SCHOOL                     B        1.27      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    1.92      SUBAREA RUNOFF(CFS) =    2.86
  EFFECTIVE AREA(ACRES) =    100.60   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.39
  TOTAL AREA(ACRES) =    100.60       PEAK FLOW RATE(CFS) =     167.70
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.47

****************************************************************************
  FLOW PROCESS FROM NODE LR021032.0 TO NODE LR021032.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  25.16
  RAINFALL INTENSITY(INCH/HR) =   2.11
  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.39
  EFFECTIVE STREAM AREA(ACRES) =   100.60
  TOTAL STREAM AREA(ACRES) =   100.60
```



```
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    167.70

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    134.66  25.93    2.068  0.75( 0.40) 0.54    89.8 LR021010.0
      1    134.37  26.14    2.058  0.75( 0.40) 0.54    90.2 LR021000.0
      2    167.70  25.16    2.106  0.75( 0.29) 0.39   100.6 LR021020.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    301.31  25.16    2.106  0.75( 0.34) 0.46   187.7 LR021020.0
      2    298.85  25.93    2.068  0.75( 0.34) 0.46   190.4 LR021010.0
      3    297.66  26.14    2.058  0.75( 0.34) 0.46   190.8 LR021000.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    301.31    Tc(MIN.) =    25.16
  EFFECTIVE AREA(ACRES) =   187.74   AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.46
  TOTAL AREA(ACRES) =    190.77
  LONGEST FLOWPATH FROM NODE  21000.00 TO NODE  21032.00 =  6309.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021032.0 TO NODE LR021043.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1332.00  DOWNSTREAM(FEET) =  1327.00
  FLOW LENGTH(FEET) =   353.61   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  11.00   GIVEN BOX HEIGHT(FEET) =   2.50
  FLOWDEPTH IN BOX IS  1.78 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  15.38
  BOX-FLOW(CFS) =    301.31
  BOX-FLOW TRAVEL TIME(MIN.) =   0.38    Tc(MIN.) =  25.54
  LONGEST FLOWPATH FROM NODE  21000.00 TO NODE  21043.00 =  6662.97 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021043.0 TO NODE LR021043.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  25.54
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.087
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.84      0.75      0.60    56
  SCHOOL                     B        2.77      0.75      0.60    56
  COMMERCIAL                 B        2.00      0.75      0.10    56
  MOBILE HOME PARK           B        6.89      0.75      0.25    56
  PUBLIC PARK                B        1.56      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.41
```

```
  SUBAREA AREA(ACRES) =   16.06      SUBAREA RUNOFF(CFS) =   25.71
  EFFECTIVE AREA(ACRES) =    203.80   AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.46
  TOTAL AREA(ACRES) =    206.83       PEAK FLOW RATE(CFS) =     320.32

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.39

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    320.50  25.52    2.088  0.75( 0.34) 0.46   203.8 LR021020.0
      2    317.83  26.28    2.051  0.75( 0.34) 0.46   206.5 LR021010.0
      3    316.70  26.46    2.043  0.75( 0.34) 0.46   206.8 LR021000.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    320.50  Tc(MIN.) =  25.52
  AREA-AVERAGED Fm(INCH/HR) =  0.34  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.46  EFFECTIVE AREA(ACRES) =    203.80

****************************************************************************
  FLOW PROCESS FROM NODE LR021043.0 TO NODE LR021043.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  25.52
  RAINFALL INTENSITY(INCH/HR) =   2.09
  AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.46
  EFFECTIVE STREAM AREA(ACRES) =   203.80
  TOTAL STREAM AREA(ACRES) =   206.83
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    320.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021040.0 TO NODE LR021041.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   905.71
  ELEVATION DATA: UPSTREAM(FEET) =   1358.00  DOWNSTREAM(FEET) =   1350.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.925
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.296
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 B        7.08      0.75      0.10    56   11.92
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.20      0.75      0.60    56   16.16
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.29
  SUBAREA RUNOFF(CFS) =     31.28
  TOTAL AREA(ACRES) =     11.28   PEAK FLOW RATE(CFS) =     31.28
```



```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021041.0 TO NODE LR021042.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1350.00  DOWNSTREAM ELEVATION(FEET) = 1341.00
  STREET LENGTH(FEET) =   642.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      44.20
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.59
    HALFSTREET FLOOD WIDTH(FEET) =   22.47
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.08
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.41
  STREET FLOW TRAVEL TIME(MIN.) =   2.62   Tc(MIN.) =  14.55
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.925
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.00      0.75      0.60    56
  COMMERCIAL                 B        5.39      0.75      0.10    56
  SCHOOL                     B        1.37      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.35
  SUBAREA AREA(ACRES) =   10.76      SUBAREA RUNOFF(CFS) =   25.79
  EFFECTIVE AREA(ACRES) =     22.04    AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.32
  TOTAL AREA(ACRES) =     22.04        PEAK FLOW RATE(CFS) =      53.31

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.62   HALFSTREET FLOOD WIDTH(FEET) =  24.12
  FLOW VELOCITY(FEET/SEC.) =  4.31   DEPTH*VELOCITY(FT*FT/SEC.) =   2.68
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  642.5 FT WITH ELEVATION-DROP =   9.0 FT, IS   34.1 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21042.00
  LONGEST FLOWPATH FROM NODE  21040.00 TO NODE  21042.00 =  1548.21 FEET.

****************************************************************************
```

```
  FLOW PROCESS FROM NODE LR021042.0 TO NODE LR021043.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1341.00  DOWNSTREAM(FEET) =  1327.00
  FLOW LENGTH(FEET) =   896.68   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   5.00   GIVEN BOX HEIGHT(FEET) =   3.00
  FLOWDEPTH IN BOX IS  1.00 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  10.62
  BOX-FLOW(CFS) =     53.31
  BOX-FLOW TRAVEL TIME(MIN.) =   1.41    Tc(MIN.) =  15.96
  LONGEST FLOWPATH FROM NODE  21040.00 TO NODE  21043.00 =  2444.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021043.0 TO NODE LR021043.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  15.96
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.767
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.11      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.51      0.75      0.60    56
  SCHOOL                     B        2.94      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.59
  SUBAREA AREA(ACRES) =    5.56      SUBAREA RUNOFF(CFS) =   11.64
  EFFECTIVE AREA(ACRES) =     27.60   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.37
  TOTAL AREA(ACRES) =     27.60       PEAK FLOW RATE(CFS) =      61.83

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021043.0 TO NODE LR021043.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.96
  RAINFALL INTENSITY(INCH/HR) =   2.77
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.37
  EFFECTIVE STREAM AREA(ACRES) =    27.60
  TOTAL STREAM AREA(ACRES) =    27.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     61.83

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    320.50  25.52    2.088  0.75( 0.34) 0.46   203.8 LR021020.0
      1    317.83  26.28    2.051  0.75( 0.34) 0.46   206.5 LR021010.0
      1    316.70  26.46    2.043  0.75( 0.34) 0.46   206.8 LR021000.0
      2     61.83  15.96    2.767  0.75( 0.28) 0.37    27.6 LR021040.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    340.14  15.96    2.767  0.75( 0.33) 0.44   155.0 LR021040.0
      2    365.45  25.52    2.088  0.75( 0.33) 0.45   231.4 LR021020.0
      3    361.87  26.28    2.051  0.75( 0.33) 0.45   234.1 LR021010.0
      4    360.52  26.46    2.043  0.75( 0.33) 0.45   234.4 LR021000.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    365.45    Tc(MIN.) =    25.52
  EFFECTIVE AREA(ACRES) =   231.40   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.45
  TOTAL AREA(ACRES) =    234.43
  LONGEST FLOWPATH FROM NODE  21000.00 TO NODE  21043.00 =  6662.97 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021043.0 TO NODE LR021044.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1327.00  DOWNSTREAM(FEET) =  1318.00
  FLOW LENGTH(FEET) =   665.51   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  12.00   GIVEN BOX HEIGHT(FEET) =   2.50
  *GIVEN BOX HEIGHT(FEET) =   2.50   ESTIMATED BOX BASEWIDTH(FEET) =   12.50
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  11.69
  BOX-FLOW(CFS) =    365.45
  BOX-FLOW TRAVEL TIME(MIN.) =   0.95    Tc(MIN.) =  26.47
  LONGEST FLOWPATH FROM NODE  21000.00 TO NODE  21044.00 =  7328.48 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021044.0 TO NODE LR021044.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  26.47
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.043
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.70      0.75      0.60    56
  COMMERCIAL                 B       13.39      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.23
  SUBAREA AREA(ACRES) =   18.09      SUBAREA RUNOFF(CFS) =   30.45
  EFFECTIVE AREA(ACRES) =    249.49   AREA-AVERAGED Fm(INCH/HR) =  0.32
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.43
  TOTAL AREA(ACRES) =    252.52       PEAK FLOW RATE(CFS) =     386.48

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
```

```
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    371.16  16.67    2.695  0.75( 0.31) 0.42   173.1 LR021040.0
      2    389.48  26.18    2.056  0.75( 0.32) 0.43   249.5 LR021020.0
      3    385.90  26.91    2.022  0.75( 0.32) 0.43   252.2 LR021010.0
      4    384.80  27.06    2.015  0.75( 0.32) 0.43   252.5 LR021000.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    389.48  Tc(MIN.) =  26.18
  AREA-AVERAGED Fm(INCH/HR) =  0.32  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.43  EFFECTIVE AREA(ACRES) =    249.49

****************************************************************************
  FLOW PROCESS FROM NODE LR021044.0 TO NODE LR021044.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020968.0 TO NODE LR020968.0 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20968.dna
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     6161.71    Tc(MIN.) =  47.88
  AREA-AVERAGED Fm(INCH/HR) =  0.52    Ybar = 0.52
  TOTAL AREA(ACRES) =   10106.93
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20968.00 = 37082.74 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020968.0 TO NODE LR020968.0 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     6161.71    Tc(MIN.) =  47.88
  AREA-AVERAGED Fm(INCH/HR) =  0.52    Ybar = 0.52
  TOTAL AREA(ACRES) =   10106.93
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20968.00 = 37082.74 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020968.0 TO NODE LR020968.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020968.0 TO NODE LR021044.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1335.00  DOWNSTREAM(FEET) =  1318.00
  FLOW LENGTH(FEET) =  1136.29   MANNING'S N =  0.014
```



```
  GIVEN BOX BASEWIDTH(FEET) =  23.00   GIVEN BOX HEIGHT(FEET) =  10.00
  FLOWDEPTH IN BOX IS  7.52 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  35.64
  BOX-FLOW(CFS) =   6161.71
  BOX-FLOW TRAVEL TIME(MIN.) =   0.53    Tc(MIN.) =  48.41
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21044.00 = 38219.03 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021044.0 TO NODE LR021044.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     6161.71    Tc(MIN.) =  48.41
  AREA-AVERAGED Fm(INCH/HR) =  0.52    Ybar = 0.52
  TOTAL AREA(ACRES) =   10106.93
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21044.00 = 38219.03 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    371.16  16.67    2.695  0.75( 0.31) 0.42   173.1 LR021040.0
      2    389.48  26.18    2.056  0.75( 0.32) 0.43   249.5 LR021020.0
      3    385.90  26.91    2.022  0.75( 0.32) 0.43   252.2 LR021010.0
      4    384.80  27.06    2.015  0.75( 0.32) 0.43   252.5 LR021000.0
  LONGEST FLOWPATH FROM NODE  21000.00 TO NODE  21044.00 =  7328.48 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.91;1H= 1.20;3H= 2.00;6H= 2.76;24H= 6.18
  S-GRAPH: VALLEY(DEV.)= 69.9%;VALLEY(UNDEV.)/DESERT= 30.1%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.81; LAG(HR) = 0.65; Fm(INCH/HR) = 0.51; Ybar = 0.51
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.67; 30M = 0.67; 1HR = 0.67;
  3HR = 0.94; 6HR = 0.97; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  10359.45
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21044.00 = 38219.03 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0270; Lca/L=0.4,n=.0242; Lca/L=0.5,n=.0222;Lca/L=0.6,n=.0208
  TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =    2635.30
  PEAK FLOW RATE(CFS) =    6250.28

****************************************************************************
  FLOW PROCESS FROM NODE LR021044.0 TO NODE LR021044.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021044.0 TO NODE LR021045.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1318.00  DOWNSTREAM(FEET) =   1295.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1385.05   CHANNEL SLOPE =  0.0166
  CHANNEL BASE(FEET) =   15.00   "Z" FACTOR =   2.000
```

```
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   7.50
  CHANNEL FLOW THRU SUBAREA(CFS) =   6250.28
  FLOW VELOCITY(FEET/SEC.) =  33.27   FLOW DEPTH(FEET) =   6.64
  TRAVEL TIME(MIN.) =   0.69   Tc(MIN.) =  49.11
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21045.00 = 39604.08 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021045.0 TO NODE LR021045.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  49.11
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.410
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A       25.15      0.98      0.50    32
  COMMERCIAL                 A       34.08      0.98      0.10    32
  SCHOOL                     A        9.02      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        6.36      0.98      0.60    32
  COMMERCIAL                 B       60.62      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       23.64      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.87
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.29
  SUBAREA AREA(ACRES) =  158.87
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.91;1H= 1.20;3H= 2.00;6H= 2.76;24H= 6.17
  S-GRAPH: VALLEY(DEV.)= 70.3%;VALLEY(UNDEV.)/DESERT= 29.7%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.82; LAG(HR) = 0.65; Fm(INCH/HR) = 0.51; Ybar = 0.51
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.66; 30M = 0.67; 1HR = 0.67;
  3HR = 0.94; 6HR = 0.97; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  10518.32
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21045.00 = 39604.08 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0266; Lca/L=0.4,n=.0238; Lca/L=0.5,n=.0219;Lca/L=0.6,n=.0204
  TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =    2686.77
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   6272.68
  TOTAL AREA(ACRES) =  10518.32       PEAK FLOW RATE(CFS) =    6272.68

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021045.0 TO NODE LR021046.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1295.00  DOWNSTREAM(FEET) =   1250.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2744.77   CHANNEL SLOPE =  0.0164
  CHANNEL BASE(FEET) =   15.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   7.50
  CHANNEL FLOW THRU SUBAREA(CFS) =   6272.68
```



```
  FLOW VELOCITY(FEET/SEC.) =  33.12   FLOW DEPTH(FEET) =   6.68
  TRAVEL TIME(MIN.) =   1.38   Tc(MIN.) =  50.49
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21046.00 = 42348.85 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021046.0 TO NODE LR021046.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  50.49
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.386
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 A       22.52      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        7.83      0.98      0.60    32
  COMMERCIAL                 B       38.49      0.75      0.10    56
  PUBLIC PARK                A        8.61      0.98      0.85    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.45      0.75      0.60    56
  MOBILE HOME PARK           B        0.52      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.90
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.25
  SUBAREA AREA(ACRES) =   82.42
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.91;1H= 1.20;3H= 2.00;6H= 2.76;24H= 6.16
  S-GRAPH: VALLEY(DEV.)= 70.6%;VALLEY(UNDEV.)/DESERT= 29.4%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.84; LAG(HR) = 0.67; Fm(INCH/HR) = 0.51; Ybar = 0.51
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.66; 30M = 0.67; 1HR = 0.67;
  3HR = 0.94; 6HR = 0.97; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  10600.74
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21046.00 = 42348.85 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0257; Lca/L=0.4,n=.0231; Lca/L=0.5,n=.0212;Lca/L=0.6,n=.0198
  TIME OF PEAK FLOW(HR) = 16.75  RUNOFF VOLUME(AF) =    2714.08
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   6207.37
  TOTAL AREA(ACRES) =  10600.74       PEAK FLOW RATE(CFS) =    6272.68
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.47

****************************************************************************
  FLOW PROCESS FROM NODE LR021046.0 TO NODE LR021069.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1250.00  DOWNSTREAM(FEET) =   1215.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2718.03   CHANNEL SLOPE =  0.0129
  CHANNEL BASE(FEET) =   18.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   9.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   6272.68
  FLOW VELOCITY(FEET/SEC.) =  30.04   FLOW DEPTH(FEET) =   6.67
  TRAVEL TIME(MIN.) =   1.51   Tc(MIN.) =  52.00
```

```
 LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21069.00 = 45066.88 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021069.0 TO NODE LR021069.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  52.00
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.362
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        5.29      0.75      0.60    56
 COMMERCIAL                 B       24.38      0.75      0.10    56
 COMMERCIAL                 A        9.45      0.98      0.10    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        1.36      0.98      0.60    32
 PUBLIC PARK                A        5.30      0.98      0.85    32
 PUBLIC PARK                B        0.69      0.75      0.85    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.27
 SUBAREA AREA(ACRES) =   46.47
 UNIT-HYDROGRAPH DATA:
 RAINFALL(INCH): 5M= 0.45;30M= 0.91;1H= 1.20;3H= 2.00;6H= 2.76;24H= 6.15
 S-GRAPH: VALLEY(DEV.)= 70.7%;VALLEY(UNDEV.)/DESERT= 29.3%
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
 Tc(HR) = 0.87; LAG(HR) = 0.69; Fm(INCH/HR) = 0.51; Ybar = 0.51
 USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
 DEPTH-AREA FACTORS: 5M = 0.66; 30M = 0.67; 1HR = 0.67;
 3HR = 0.94; 6HR = 0.97; 24HR= 0.98
 UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  10647.21
 LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21069.00 = 45066.88 FEET.
  EQUIVALENT BASIN FACTOR APPROXIMATIONS:
  Lca/L=0.3,n=.0251; Lca/L=0.4,n=.0225; Lca/L=0.5,n=.0206;Lca/L=0.6,n=.0193
 TIME OF PEAK FLOW(HR) = 16.75  RUNOFF VOLUME(AF) =    2727.58
 UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   6224.23
 TOTAL AREA(ACRES) =  10647.21       PEAK FLOW RATE(CFS) =    6272.68
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.94; 6HR = 2.56; 24HR = 4.77

****************************************************************************
 FLOW PROCESS FROM NODE LR021069.0 TO NODE LR021069.0 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE LR021050.0 TO NODE LR021050.5 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   520.56
 ELEVATION DATA: UPSTREAM(FEET) =   1255.00  DOWNSTREAM(FEET) =   1250.00
```



```
 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.396
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.802
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       A        2.98      0.98      0.50    32   12.02
 COMMERCIAL                 A        5.49      0.98      0.10    32    9.40
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        0.85      0.98      0.60    32   12.73
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.27
 SUBAREA RUNOFF(CFS) =     29.66
 TOTAL AREA(ACRES) =      9.32   PEAK FLOW RATE(CFS) =     29.66

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.38; 6HR = 1.88; 24HR = 3.38

****************************************************************************
 FLOW PROCESS FROM NODE LR021050.5 TO NODE LR021051.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1250.00  DOWNSTREAM ELEVATION(FEET) = 1246.00
 STREET LENGTH(FEET) =   343.10   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      43.15
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.60
   HALFSTREET FLOOD WIDTH(FEET) =   23.02
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.81
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.29
 STREET FLOW TRAVEL TIME(MIN.) =   1.50   Tc(MIN.) =  10.90
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.479
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       A        2.98      0.98      0.50    32
 COMMERCIAL                 A        5.50      0.98      0.10    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        0.85      0.98      0.60    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.27
```

```
  SUBAREA AREA(ACRES) =    9.33      SUBAREA RUNOFF(CFS) =   26.97
  EFFECTIVE AREA(ACRES) =     18.65    AREA-AVERAGED Fm(INCH/HR) =  0.27
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.27
  TOTAL AREA(ACRES) =     18.65        PEAK FLOW RATE(CFS) =      53.91

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.38; 6HR = 1.88; 24HR = 3.38

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.64   HALFSTREET FLOOD WIDTH(FEET) =  25.09
  FLOW VELOCITY(FEET/SEC.) =  4.05   DEPTH*VELOCITY(FT*FT/SEC.) =   2.60
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  343.1 FT WITH ELEVATION-DROP =   4.0 FT, IS   33.9 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21051.00
  LONGEST FLOWPATH FROM NODE  21050.00 TO NODE  21051.00 =   863.66 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021051.0 TO NODE LR021052.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1246.00  DOWNSTREAM ELEVATION(FEET) = 1236.00
  STREET LENGTH(FEET) =   756.64   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      80.81
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.71
    HALFSTREET FLOOD WIDTH(FEET) =   28.57
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.74
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.37
  STREET FLOW TRAVEL TIME(MIN.) =   2.66   Tc(MIN.) =  13.56
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.051
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        1.87      0.98      0.50    32
  COMMERCIAL                 A       17.40      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.43      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.17
  SUBAREA AREA(ACRES) =   20.70      SUBAREA RUNOFF(CFS) =   53.74
  EFFECTIVE AREA(ACRES) =     39.35    AREA-AVERAGED Fm(INCH/HR) =  0.21
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.22
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  TOTAL AREA(ACRES) =     39.35        PEAK FLOW RATE(CFS) =     100.48

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 4.96

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.76   HALFSTREET FLOOD WIDTH(FEET) =  31.14
  FLOW VELOCITY(FEET/SEC.) =  4.99   DEPTH*VELOCITY(FT*FT/SEC.) =   3.81
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  756.6 FT WITH ELEVATION-DROP =  10.0 FT, IS   64.2 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21052.00
  LONGEST FLOWPATH FROM NODE  21050.00 TO NODE  21052.00 =  1620.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021052.0 TO NODE LR021067.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1236.00  DOWNSTREAM ELEVATION(FEET) = 1220.00
  STREET LENGTH(FEET) =  1432.84   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     146.88
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.89
    HALFSTREET FLOOD WIDTH(FEET) =   37.36
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.13
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.55
  STREET FLOW TRAVEL TIME(MIN.) =   4.66   Tc(MIN.) =  18.22
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.556
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A       17.32      0.98      0.50    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.30      0.75      0.60    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        5.92      0.75      0.50    56
  COMMERCIAL                 B        6.47      0.75      0.10    56
  COMMERCIAL                 A       13.55      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.00      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.91
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.33
  SUBAREA AREA(ACRES) =   45.56      SUBAREA RUNOFF(CFS) =   92.52
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  EFFECTIVE AREA(ACRES) =     84.91    AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.93  AREA-AVERAGED Ap =  0.28
  TOTAL AREA(ACRES) =     84.91        PEAK FLOW RATE(CFS) =     175.45

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.05

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.94   HALFSTREET FLOOD WIDTH(FEET) =  40.11
  FLOW VELOCITY(FEET/SEC.) =  5.33   DEPTH*VELOCITY(FT*FT/SEC.) =   5.02

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.13
  PIPE-FLOW(CFS) =     39.96
  PIPEFLOW TRAVEL TIME(MIN.) =   2.94    Tc(MIN.) =  16.50
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.713
  SUBAREA AREA(ACRES) =   45.56      SUBAREA RUNOFF(CFS) =   98.96
  TOTAL AREA(ACRES) =     84.91        PEAK FLOW RATE(CFS) =    187.44

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.05
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  147.49
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.89
    HALFSTREET FLOOD WIDTH(FEET) =   37.42
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.13
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.56
  LONGEST FLOWPATH FROM NODE  21050.00 TO NODE  21067.00 =  3053.14 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021067.0 TO NODE LR021067.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  16.50
  RAINFALL INTENSITY(INCH/HR) =   2.71
  AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.93
  AREA-AVERAGED Ap =  0.28
  EFFECTIVE STREAM AREA(ACRES) =    84.91
  TOTAL STREAM AREA(ACRES) =    84.91
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    187.44

****************************************************************************
  FLOW PROCESS FROM NODE LR021060.0 TO NODE LR021061.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
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  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1000.00
  ELEVATION DATA: UPSTREAM(FEET) =   1268.00  DOWNSTREAM(FEET) =   1267.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   19.181
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.478
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        1.55      0.98      0.50    32   24.54
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.16      0.98      0.60    32   26.00
  COMMERCIAL                 A        6.97      0.98      0.10    32   19.18
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.22
  SUBAREA RUNOFF(CFS) =     19.68
  TOTAL AREA(ACRES) =      9.68   PEAK FLOW RATE(CFS) =     19.68

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.39

****************************************************************************
  FLOW PROCESS FROM NODE LR021061.0 TO NODE LR021062.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1267.00  DOWNSTREAM ELEVATION(FEET) = 1266.00
  STREET LENGTH(FEET) =   371.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      29.33
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.71
    HALFSTREET FLOOD WIDTH(FEET) =   28.20
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.87
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.33
  STREET FLOW TRAVEL TIME(MIN.) =   3.31   Tc(MIN.) =  22.49
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.252
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        1.79      0.98      0.50    32
  COMMERCIAL                 A        7.48      0.98      0.10    32
  RESIDENTIAL
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  "3-4 DWELLINGS/ACRE"       A        1.27      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.23
  SUBAREA AREA(ACRES) =   10.54      SUBAREA RUNOFF(CFS) =   19.26
  EFFECTIVE AREA(ACRES) =     20.22    AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.23
  TOTAL AREA(ACRES) =     20.22        PEAK FLOW RATE(CFS) =      36.98

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.39

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.75   HALFSTREET FLOOD WIDTH(FEET) =  30.39
  FLOW VELOCITY(FEET/SEC.) =  2.03   DEPTH*VELOCITY(FT*FT/SEC.) =   1.53
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  371.0 FT WITH ELEVATION-DROP =   1.0 FT, IS   31.5 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21062.00
  LONGEST FLOWPATH FROM NODE  21060.00 TO NODE  21062.00 =  1371.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021062.0 TO NODE LR021063.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1266.00  DOWNSTREAM ELEVATION(FEET) = 1265.00
  STREET LENGTH(FEET) =   228.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      43.11
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.74
    HALFSTREET FLOOD WIDTH(FEET) =   29.48
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.51
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.85
  STREET FLOW TRAVEL TIME(MIN.) =   1.52   Tc(MIN.) =  24.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.166
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        1.53      0.98      0.50    32
  COMMERCIAL                 A        4.98      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.48      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.22
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  SUBAREA AREA(ACRES) =    6.99      SUBAREA RUNOFF(CFS) =   12.27
  EFFECTIVE AREA(ACRES) =     27.21    AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.23
  TOTAL AREA(ACRES) =     27.21        PEAK FLOW RATE(CFS) =      47.67

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.76   HALFSTREET FLOOD WIDTH(FEET) =  30.46
  FLOW VELOCITY(FEET/SEC.) =  2.60   DEPTH*VELOCITY(FT*FT/SEC.) =   1.97
  LONGEST FLOWPATH FROM NODE  21060.00 TO NODE  21063.00 =  1599.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021063.0 TO NODE LR021064.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1265.00  DOWNSTREAM ELEVATION(FEET) = 1258.00
  STREET LENGTH(FEET) =   323.58   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.91

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      56.05
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.64
    HALFSTREET FLOOD WIDTH(FEET) =   24.04
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.70
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.00
  STREET FLOW TRAVEL TIME(MIN.) =   1.15   Tc(MIN.) =  25.15
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.106
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        4.16      0.98      0.50    32
  COMMERCIAL                 A        5.34      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.77      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.30
  SUBAREA AREA(ACRES) =   10.27      SUBAREA RUNOFF(CFS) =   16.77
  EFFECTIVE AREA(ACRES) =     37.48    AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.25
  TOTAL AREA(ACRES) =     37.48        PEAK FLOW RATE(CFS) =      62.97

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
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  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.66   HALFSTREET FLOOD WIDTH(FEET) =  25.15
  FLOW VELOCITY(FEET/SEC.) =  4.83   DEPTH*VELOCITY(FT*FT/SEC.) =   3.20
  LONGEST FLOWPATH FROM NODE  21060.00 TO NODE  21064.00 =  1923.08 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021064.0 TO NODE LR021065.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1258.00  DOWNSTREAM ELEVATION(FEET) = 1254.00
  STREET LENGTH(FEET) =   294.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.03

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      70.43
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.72
    HALFSTREET FLOOD WIDTH(FEET) =   28.81
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.30
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.11
  STREET FLOW TRAVEL TIME(MIN.) =   1.14   Tc(MIN.) =  26.29
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.051
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        4.73      0.98      0.50    32
  COMMERCIAL                 A        3.54      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.55      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.37
  SUBAREA AREA(ACRES) =    9.82      SUBAREA RUNOFF(CFS) =   14.92
  EFFECTIVE AREA(ACRES) =     47.30    AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.27
  TOTAL AREA(ACRES) =     47.30        PEAK FLOW RATE(CFS) =      76.02

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.74   HALFSTREET FLOOD WIDTH(FEET) =  29.48
  FLOW VELOCITY(FEET/SEC.) =  4.43   DEPTH*VELOCITY(FT*FT/SEC.) =   3.26
  LONGEST FLOWPATH FROM NODE  21060.00 TO NODE  21065.00 =  2217.58 FEET.
```



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****************************************************************************
  FLOW PROCESS FROM NODE LR021065.0 TO NODE LR021066.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1254.00  DOWNSTREAM ELEVATION(FEET) = 1230.00
  STREET LENGTH(FEET) =  1452.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.97

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      81.71
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.73
    HALFSTREET FLOOD WIDTH(FEET) =   29.23
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.84
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.54
  STREET FLOW TRAVEL TIME(MIN.) =   5.00   Tc(MIN.) =  31.29
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.847
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        2.04      0.98      0.60    32
  COMMERCIAL                 A        5.75      0.98      0.10    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.23
  SUBAREA AREA(ACRES) =    7.79      SUBAREA RUNOFF(CFS) =   11.37
  EFFECTIVE AREA(ACRES) =     55.09    AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.27
  TOTAL AREA(ACRES) =     55.09        PEAK FLOW RATE(CFS) =      78.75

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.15

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.73   HALFSTREET FLOOD WIDTH(FEET) =  28.93
  FLOW VELOCITY(FEET/SEC.) =  4.77   DEPTH*VELOCITY(FT*FT/SEC.) =   3.46
  LONGEST FLOWPATH FROM NODE  21060.00 TO NODE  21066.00 =  3669.58 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021066.0 TO NODE LR021067.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1230.00  DOWNSTREAM ELEVATION(FEET) = 1220.00
  STREET LENGTH(FEET) =   858.50   CURB HEIGHT(INCHES) =  8.0
```

```
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      80.62
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.76
    HALFSTREET FLOOD WIDTH(FEET) =   30.82
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.29
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.28
  STREET FLOW TRAVEL TIME(MIN.) =   3.33   Tc(MIN.) =  34.62
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.739
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        1.85      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.05      0.75      0.60    56
  COMMERCIAL                 A        0.62      0.98      0.10    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.11
  SUBAREA AREA(ACRES) =    2.52      SUBAREA RUNOFF(CFS) =    3.74
  EFFECTIVE AREA(ACRES) =     57.61    AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.26
  TOTAL AREA(ACRES) =     57.61        PEAK FLOW RATE(CFS) =      78.75
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 4.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.76   HALFSTREET FLOOD WIDTH(FEET) =  30.64
  FLOW VELOCITY(FEET/SEC.) =  4.24   DEPTH*VELOCITY(FT*FT/SEC.) =   3.22
  LONGEST FLOWPATH FROM NODE  21060.00 TO NODE  21067.00 =  4528.08 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021067.0 TO NODE LR021067.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  34.62
  RAINFALL INTENSITY(INCH/HR) =   1.74
  AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.97
  AREA-AVERAGED Ap =  0.26
  EFFECTIVE STREAM AREA(ACRES) =    57.61
```



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  TOTAL STREAM AREA(ACRES) =    57.61
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     78.75

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    187.44  16.50    2.713  0.93( 0.26) 0.28    84.9 LR021050.0
      2     78.75  34.62    1.739  0.97( 0.25) 0.26    57.6 LR021060.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    249.54  16.50    2.713  0.94( 0.26) 0.27   112.4 LR021050.0
      2    191.77  34.62    1.739  0.95( 0.26) 0.27   142.5 LR021060.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    249.54    Tc(MIN.) =    16.50
  EFFECTIVE AREA(ACRES) =   112.36   AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.94  AREA-AVERAGED Ap =  0.27
  TOTAL AREA(ACRES) =    142.52
  LONGEST FLOWPATH FROM NODE  21060.00 TO NODE  21067.00 =  4528.08 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021067.0 TO NODE LR021068.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1220.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1217.50
  FLOW LENGTH(FEET) =  1347.88   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  84.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  84.0 INCH PIPE IS  62.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.10
  PIPE-FLOW(CFS) =    249.54
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   2.99    Tc(MIN.) =  19.49
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.455
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        7.32      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.09      0.75      0.60    56
  COMMERCIAL                 A       15.30      0.98      0.10    32
  COMMERCIAL                 B       41.62      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.85
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.19
  SUBAREA AREA(ACRES) =   69.33      SUBAREA RUNOFF(CFS) =  143.10
  EFFECTIVE AREA(ACRES) =    181.69    AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.91  AREA-AVERAGED Ap =  0.24
  TOTAL AREA(ACRES) =    211.85        PEAK FLOW RATE(CFS) =    365.25
```

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 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.00; 6HR = 2.69; 24HR = 4.84

 STREET CROSS-SECTION INFORMATION:
 CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 39.00
 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 *NOTE: STREET-CAPACITY MAY BE EXCEEDED*
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  115.71
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  1.10
   HALFSTREET FLOOD WIDTH(FEET) =   60.91
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.17
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.39
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  1347.9 FT WITH ELEVATION-DROP =   2.5 FT, IS  144.9 CFS,
        WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  21068.00

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    365.25  19.49    2.455  0.91( 0.22) 0.24   181.7 LR021050.0
     2    271.91  37.72    1.651  0.92( 0.23) 0.24   211.9 LR021060.0
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    365.25  Tc(MIN.) =  19.49
 AREA-AVERAGED Fm(INCH/HR) =  0.22  AREA-AVERAGED Fp(INCH/HR) =  0.91
 AREA-AVERAGED Ap =  0.24  EFFECTIVE AREA(ACRES) =    181.69
 LONGEST FLOWPATH FROM NODE  21060.00 TO NODE  21068.00 =  5875.96 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021068.0 TO NODE LR021069.0 IS CODE =  33
----------------------------------------------------------------------------
 >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
 >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1217.50
 DOWNSTREAM NODE ELEVATION(FEET) =  1215.00
 FLOW LENGTH(FEET) =  1146.78   MANNING'S N =  0.013

 USER SPECIFIED PIPE DIAMETER(INCH) =  93.00    NUMBER OF PIPES =   1
 USER SPECIFIED PIPE SYSTEM UNDER PRESSURE
 PIPE-FLOW VELOCITY(FEET/SEC.) =   7.64
 PIPE-FLOW(CFS) =    360.86
 PIPEFLOW TRAVEL TIME(MIN.) =   2.50    Tc(MIN.) =  21.99
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.283
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.21      0.75      0.60    56
```



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 COMMERCIAL                 B       33.09      0.75      0.10    56
 PUBLIC PARK                B        0.04      0.75      0.85    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.12
 SUBAREA AREA(ACRES) =   34.34      SUBAREA RUNOFF(CFS) =   67.82
 EFFECTIVE AREA(ACRES) =    216.03    AREA-AVERAGED Fm(INCH/HR) =  0.23
 AREA-AVERAGED Fp(INCH/HR) =  0.91  AREA-AVERAGED Ap =  0.26
 TOTAL AREA(ACRES) =    246.19        PEAK FLOW RATE(CFS) =    398.19

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.88; 6HR = 2.44; 24HR = 4.76

 STREET CROSS-SECTION INFORMATION:
 CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 39.00
 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   37.32
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.79
   HALFSTREET FLOOD WIDTH(FEET) =   38.13
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.75
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.39
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  1146.8 FT WITH ELEVATION-DROP =   2.5 FT, IS   78.6 CFS,
        WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  21069.00

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    405.02  21.99    2.283  0.90( 0.20) 0.22   216.0 LR021050.0
     2    307.58  40.00    1.594  0.91( 0.21) 0.23   246.2 LR021060.0
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    405.02  Tc(MIN.) =  21.99
 AREA-AVERAGED Fm(INCH/HR) =  0.20  AREA-AVERAGED Fp(INCH/HR) =  0.90
 AREA-AVERAGED Ap =  0.22  EFFECTIVE AREA(ACRES) =    216.03
 LONGEST FLOWPATH FROM NODE  21060.00 TO NODE  21069.00 =  7022.74 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021069.0 TO NODE LR021069.0 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    405.02  21.99    2.283  0.90( 0.20) 0.22   216.0 LR021050.0
     2    307.58  40.00    1.594  0.91( 0.21) 0.23   246.2 LR021060.0
 LONGEST FLOWPATH FROM NODE  21060.00 TO NODE  21069.00 =  7022.74 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
```

```
  PEAK FLOW RATE(CFS) =     6272.68    Tc(MIN.) =  52.00
  AREA-AVERAGED Fm(INCH/HR) =  0.51    Ybar = 0.51
  TOTAL AREA(ACRES) =   10647.21
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21069.00 = 45066.88 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.91;1H= 1.20;3H= 2.00;6H= 2.75;24H= 6.12
  S-GRAPH: VALLEY(DEV.)= 71.4%;VALLEY(UNDEV.)/DESERT= 28.6%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.87; LAG(HR) = 0.69; Fm(INCH/HR) = 0.50; Ybar = 0.50
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.66; 30M = 0.66; 1HR = 0.67;
  3HR = 0.94; 6HR = 0.97; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  10893.40
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21069.00 = 45066.88 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0251; Lca/L=0.4,n=.0225; Lca/L=0.5,n=.0206;Lca/L=0.6,n=.0193
  TIME OF PEAK FLOW(HR) = 16.75  RUNOFF VOLUME(AF) =    2800.83
  PEAK FLOW RATE(CFS) =    6375.22

****************************************************************************
  FLOW PROCESS FROM NODE LR021069.0 TO NODE LR021069.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021069.0 TO NODE LR021070.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1215.00  DOWNSTREAM(FEET) =   1183.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2795.47   CHANNEL SLOPE =  0.0114
  CHANNEL BASE(FEET) =   18.000   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   9.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   6375.22
  FLOW VELOCITY(FEET/SEC.) =  28.91   FLOW DEPTH(FEET) =   6.92
  TRAVEL TIME(MIN.) =   1.61   Tc(MIN.) =  53.61
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21070.00 = 47862.35 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021070.0 TO NODE LR021070.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  53.61
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.337
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B      108.13      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       17.27      0.75      0.60    56
  PUBLIC PARK                B        5.11      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.20
```



```
  SUBAREA AREA(ACRES) =  130.51
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.91;1H= 1.20;3H= 2.00;6H= 2.75;24H= 6.11
  S-GRAPH: VALLEY(DEV.)= 71.7%;VALLEY(UNDEV.)/DESERT= 28.3%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.89; LAG(HR) = 0.71; Fm(INCH/HR) = 0.50; Ybar = 0.50
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.65; 30M = 0.66; 1HR = 0.67;
  3HR = 0.94; 6HR = 0.97; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  11023.91
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21070.00 = 47862.35 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0245; Lca/L=0.4,n=.0219; Lca/L=0.5,n=.0202;Lca/L=0.6,n=.0188
  TIME OF PEAK FLOW(HR) = 16.75  RUNOFF VOLUME(AF) =    2843.68
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   6370.76
  TOTAL AREA(ACRES) =  11023.91       PEAK FLOW RATE(CFS) =    6375.22
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021070.0 TO NODE LR021070.0 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 21070.dna
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =  11023.91  TC(MIN.) =     53.61
  AREA-AVERAGED Fm(INCH/HR)=  0.50   Ybar =  0.50
  PEAK FLOW RATE(CFS)   =   6375.22
============================================================================
============================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

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**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                           County of San Bernardino
                         Transportation Flood Control

                          Water Resources Division

--------------------------------------------------------------------------
  FILE NAME: LR0211ZZ.Z13
  TIME/DATE OF STUDY: 09:23 09/29/2004
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.2500

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  =================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
```



```
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


**************************************************************************
  FLOW PROCESS FROM NODE LR021100.0 TO NODE LR021101.0 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   678.31
  ELEVATION DATA: UPSTREAM(FEET) =   1870.00  DOWNSTREAM(FEET) =   1820.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.418
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.797
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.91      0.75       0.60    56    9.42
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.56      0.75       0.70    56   10.01
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA RUNOFF(CFS) =     22.07
  TOTAL AREA(ACRES) =      7.47   PEAK FLOW RATE(CFS) =     22.07

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

**************************************************************************
  FLOW PROCESS FROM NODE LR021101.0 TO NODE LR021102.0 IS CODE =  54
--------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1820.00  DOWNSTREAM(FEET) =   1770.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   733.55   CHANNEL SLOPE =  0.0682
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     22.07
  FLOW VELOCITY(FEET/SEC.) =   5.13   FLOW DEPTH(FEET) =   0.93
  TRAVEL TIME(MIN.) =   2.39   Tc(MIN.) =  11.80
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21102.00 =  1411.86 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR021102.0 TO NODE LR021102.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  11.80
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.316
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       10.44      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.19      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   12.63      SUBAREA RUNOFF(CFS) =   31.89
  EFFECTIVE AREA(ACRES) =     20.10   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     20.10       PEAK FLOW RATE(CFS) =      50.72

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021102.0 TO NODE LR021103.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1770.00  DOWNSTREAM(FEET) =   1750.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   514.94   CHANNEL SLOPE =  0.0388
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     50.72
  FLOW VELOCITY(FEET/SEC.) =   5.07   FLOW DEPTH(FEET) =   1.41
  TRAVEL TIME(MIN.) =   1.69   Tc(MIN.) =  13.50
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21103.00 =  1926.80 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021103.0 TO NODE LR021103.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  13.50
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.060
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.23      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        8.43      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    9.66      SUBAREA RUNOFF(CFS) =   22.13
  EFFECTIVE AREA(ACRES) =     29.76   AREA-AVERAGED Fm(INCH/HR) =  0.51
```



```
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     29.76       PEAK FLOW RATE(CFS) =      68.22

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021103.0 TO NODE LR021104.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1750.00  DOWNSTREAM(FEET) =   1715.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   660.67   CHANNEL SLOPE =  0.0530
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     68.22
  FLOW VELOCITY(FEET/SEC.) =   6.14   FLOW DEPTH(FEET) =   1.49
  TRAVEL TIME(MIN.) =   1.79   Tc(MIN.) =  15.29
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21104.00 =  2587.47 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021104.0 TO NODE LR021104.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  15.29
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.839
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       20.18      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.62      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   24.80      SUBAREA RUNOFF(CFS) =   51.99
  EFFECTIVE AREA(ACRES) =     54.56   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     54.56       PEAK FLOW RATE(CFS) =     114.30

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021104.0 TO NODE LR021105.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1715.00  DOWNSTREAM ELEVATION(FEET) = 1705.00
  STREET LENGTH(FEET) =   402.43   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
```

```
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     117.93
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.76
    HALFSTREET FLOOD WIDTH(FEET) =   30.88
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.26
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.78
  STREET FLOW TRAVEL TIME(MIN.) =   1.07   Tc(MIN.) =  16.36
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.726
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.78      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.85      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    3.63      SUBAREA RUNOFF(CFS) =    7.25
  EFFECTIVE AREA(ACRES) =     58.19    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     58.19        PEAK FLOW RATE(CFS) =     116.00

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.76   HALFSTREET FLOOD WIDTH(FEET) =  30.70
  FLOW VELOCITY(FEET/SEC.) =  6.23   DEPTH*VELOCITY(FT*FT/SEC.) =   4.74
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21105.00 =  2989.90 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021105.0 TO NODE LR021106.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1705.00  DOWNSTREAM ELEVATION(FEET) = 1690.00
  STREET LENGTH(FEET) =   562.31   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.86
```



```
    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     121.72
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.76
    HALFSTREET FLOOD WIDTH(FEET) =   30.82
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.48
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.95
  STREET FLOW TRAVEL TIME(MIN.) =   1.45   Tc(MIN.) =  17.81
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.591
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.35      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.77      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    6.12      SUBAREA RUNOFF(CFS) =   11.44
  EFFECTIVE AREA(ACRES) =     64.31    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     64.31        PEAK FLOW RATE(CFS) =     120.37

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.76   HALFSTREET FLOOD WIDTH(FEET) =  30.70
  FLOW VELOCITY(FEET/SEC.) =  6.46   DEPTH*VELOCITY(FT*FT/SEC.) =   4.92
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21106.00 =  3552.21 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021106.0 TO NODE LR021107.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1690.00  DOWNSTREAM ELEVATION(FEET) = 1670.00
  STREET LENGTH(FEET) =   483.05   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.77

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     126.93
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.73
    HALFSTREET FLOOD WIDTH(FEET) =   29.05
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.62
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.55
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  STREET FLOW TRAVEL TIME(MIN.) =   1.06   Tc(MIN.) =  18.86
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.503
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.11      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.21      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    7.32      SUBAREA RUNOFF(CFS) =   13.12
  EFFECTIVE AREA(ACRES) =     71.63    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     71.63        PEAK FLOW RATE(CFS) =     128.39

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.73   HALFSTREET FLOOD WIDTH(FEET) =  29.17
  FLOW VELOCITY(FEET/SEC.) =  7.64   DEPTH*VELOCITY(FT*FT/SEC.) =   5.58
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21107.00 =  4035.26 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021107.0 TO NODE LR021108.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1670.00  DOWNSTREAM ELEVATION(FEET) = 1640.00
  STREET LENGTH(FEET) =   579.31   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.74

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     157.57
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.75
    HALFSTREET FLOOD WIDTH(FEET) =   30.09
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.81
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.59
  STREET FLOW TRAVEL TIME(MIN.) =   1.10   Tc(MIN.) =  19.96
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.419
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       28.69      0.75      0.70    56
```



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  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.30      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   33.99      SUBAREA RUNOFF(CFS) =   58.35
  EFFECTIVE AREA(ACRES) =    105.62    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    105.62        PEAK FLOW RATE(CFS) =     181.37

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.78   HALFSTREET FLOOD WIDTH(FEET) =  31.55
  FLOW VELOCITY(FEET/SEC.) =  9.21   DEPTH*VELOCITY(FT*FT/SEC.) =   7.16

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.74
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.09
  PIPE-FLOW(CFS) =     47.46
  PIPEFLOW TRAVEL TIME(MIN.) =   0.64    Tc(MIN.) =  19.50
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.453
  SUBAREA AREA(ACRES) =   33.99      SUBAREA RUNOFF(CFS) =   59.39
  TOTAL AREA(ACRES) =    105.62        PEAK FLOW RATE(CFS) =    184.58

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  137.12
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.72
    HALFSTREET FLOOD WIDTH(FEET) =   28.75
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.41
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.07
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21108.00 =  4614.57 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021108.0 TO NODE LR021109.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1640.00  DOWNSTREAM ELEVATION(FEET) = 1600.00
  STREET LENGTH(FEET) =  1132.55   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
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Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.80

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     203.63
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.85
  HALFSTREET FLOOD WIDTH(FEET) =   35.03
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.37
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.09
STREET FLOW TRAVEL TIME(MIN.) =   2.25   Tc(MIN.) =  21.76
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.297
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"2 DWELLINGS/ACRE"         B       21.44      0.75      0.70    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        2.32      0.75      0.60    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
SUBAREA AREA(ACRES) =   23.76      SUBAREA RUNOFF(CFS) =   38.09
EFFECTIVE AREA(ACRES) =    129.38    AREA-AVERAGED Fm(INCH/HR) =  0.51
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
TOTAL AREA(ACRES) =    129.38        PEAK FLOW RATE(CFS) =     207.85

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.85   HALFSTREET FLOOD WIDTH(FEET) =  35.28
FLOW VELOCITY(FEET/SEC.) =  8.43   DEPTH*VELOCITY(FT*FT/SEC.) =   7.18

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.80
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  13.48
PIPE-FLOW(CFS) =     53.66
PIPEFLOW TRAVEL TIME(MIN.) =   1.40    Tc(MIN.) =  20.90
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.353
SUBAREA AREA(ACRES) =   23.76      SUBAREA RUNOFF(CFS) =   39.28
TOTAL AREA(ACRES) =    129.38        PEAK FLOW RATE(CFS) =    214.36

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  160.71
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.79
  HALFSTREET FLOOD WIDTH(FEET) =   32.29
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.79
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.17
LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21109.00 =  5747.12 FEET.
```



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****************************************************************************
  FLOW PROCESS FROM NODE LR021109.0 TO NODE LR021110.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1600.00  DOWNSTREAM ELEVATION(FEET) = 1550.00
  STREET LENGTH(FEET) =   761.67   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     220.62
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.79
    HALFSTREET FLOOD WIDTH(FEET) =   32.35
    AVERAGE FLOW VELOCITY(FEET/SEC.) =   10.66
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    8.46
  STREET FLOW TRAVEL TIME(MIN.) =   1.19   Tc(MIN.) =  22.09
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.276
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.59      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.29      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    7.88      SUBAREA RUNOFF(CFS) =   12.52
  EFFECTIVE AREA(ACRES) =    137.26    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    137.26        PEAK FLOW RATE(CFS) =     217.92

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.79   HALFSTREET FLOOD WIDTH(FEET) =  32.23
  FLOW VELOCITY(FEET/SEC.) = 10.61   DEPTH*VELOCITY(FT*FT/SEC.) =   8.39

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.70
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.72
  PIPE-FLOW(CFS) =     96.88
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  PIPEFLOW TRAVEL TIME(MIN.) =   0.64    Tc(MIN.) =  21.55
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.311
  SUBAREA AREA(ACRES) =    7.88      SUBAREA RUNOFF(CFS) =   12.76
  TOTAL AREA(ACRES) =    137.26        PEAK FLOW RATE(CFS) =    222.18

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  125.30
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.68
    HALFSTREET FLOOD WIDTH(FEET) =   26.92
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.78
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.02
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21110.00 =  6508.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021110.0 TO NODE LR021129.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1550.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1495.00
  FLOW LENGTH(FEET) =  1519.57   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  32.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  24.23
  PIPE-FLOW(CFS) =    222.18
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.05    Tc(MIN.) =  22.59
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21129.00 =  8028.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021129.0 TO NODE LR021129.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  22.59
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.246
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       21.30      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   21.30      SUBAREA RUNOFF(CFS) =   34.45
  EFFECTIVE AREA(ACRES) =    158.56   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.67
  TOTAL AREA(ACRES) =    158.56       PEAK FLOW RATE(CFS) =     248.64

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
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  FLOW PROCESS FROM NODE LR021129.0 TO NODE LR021129.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021121.0 TO NODE LR021122.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   969.86
  ELEVATION DATA: UPSTREAM(FEET) =   1830.00  DOWNSTREAM(FEET) =   1770.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.254
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.412
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.27      0.75      0.60    56   11.25
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.70      0.75      0.70    56   11.96
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA RUNOFF(CFS) =     18.21
  TOTAL AREA(ACRES) =      6.97   PEAK FLOW RATE(CFS) =     18.21

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.39

****************************************************************************
  FLOW PROCESS FROM NODE LR021122.0 TO NODE LR021123.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1770.00  DOWNSTREAM ELEVATION(FEET) = 1700.00
  STREET LENGTH(FEET) =  1318.97   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.66

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      30.37
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.45
    HALFSTREET FLOOD WIDTH(FEET) =   16.01
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.67
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.53
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 STREET FLOW TRAVEL TIME(MIN.) =   3.88   Tc(MIN.) =  15.13
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.856
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.67      0.75      0.60    56
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B       10.86      0.75      0.70    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
 SUBAREA AREA(ACRES) =   11.53      SUBAREA RUNOFF(CFS) =   24.25
 EFFECTIVE AREA(ACRES) =     18.50    AREA-AVERAGED Fm(INCH/HR) =  0.52
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
 TOTAL AREA(ACRES) =     18.50        PEAK FLOW RATE(CFS) =      38.97

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.38; 6HR = 1.87; 24HR = 3.39

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.48   HALFSTREET FLOOD WIDTH(FEET) =  17.65
 FLOW VELOCITY(FEET/SEC.) =  6.03   DEPTH*VELOCITY(FT*FT/SEC.) =   2.89
 LONGEST FLOWPATH FROM NODE  21121.00 TO NODE  21123.00 =  2288.83 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021123.0 TO NODE LR021124.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1700.00  DOWNSTREAM ELEVATION(FEET) = 1625.00
 STREET LENGTH(FEET) =  1863.96   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      68.27
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.57
   HALFSTREET FLOOD WIDTH(FEET) =   21.74
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.70
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.85
 STREET FLOW TRAVEL TIME(MIN.) =   4.63   Tc(MIN.) =  19.77
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.433
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        4.04      0.75      0.60    56
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 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B       29.70      0.75      0.70    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
 SUBAREA AREA(ACRES) =   33.74      SUBAREA RUNOFF(CFS) =   58.27
 EFFECTIVE AREA(ACRES) =     52.24    AREA-AVERAGED Fm(INCH/HR) =  0.52
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
 TOTAL AREA(ACRES) =     52.24        PEAK FLOW RATE(CFS) =      90.20

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.89; 24HR = 3.41

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.62   HALFSTREET FLOOD WIDTH(FEET) =  24.12
 FLOW VELOCITY(FEET/SEC.) =  7.29   DEPTH*VELOCITY(FT*FT/SEC.) =   4.54
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L = 1864.0 FT WITH ELEVATION-DROP =  75.0 FT, IS   68.5 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21124.00
 LONGEST FLOWPATH FROM NODE  21121.00 TO NODE  21124.00 =  4152.79 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021124.0 TO NODE LR021125.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1625.00  DOWNSTREAM ELEVATION(FEET) = 1590.00
 STREET LENGTH(FEET) =   472.91   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.63

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      94.11
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.58
   HALFSTREET FLOOD WIDTH(FEET) =   21.86
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.15
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.28
 STREET FLOW TRAVEL TIME(MIN.) =   0.86   Tc(MIN.) =  20.63
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.372
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        4.00      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.67      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
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```
  SUBAREA AREA(ACRES) =    4.67      SUBAREA RUNOFF(CFS) =    7.81
  EFFECTIVE AREA(ACRES) =     56.91    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     56.91        PEAK FLOW RATE(CFS) =      95.12

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.58   HALFSTREET FLOOD WIDTH(FEET) =  21.92
  FLOW VELOCITY(FEET/SEC.) =  9.20   DEPTH*VELOCITY(FT*FT/SEC.) =   5.32
  LONGEST FLOWPATH FROM NODE  21121.00 TO NODE  21125.00 =  4625.70 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021125.0 TO NODE LR021126.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1590.00  DOWNSTREAM ELEVATION(FEET) = 1570.00
  STREET LENGTH(FEET) =   502.51   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      99.83
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.64
    HALFSTREET FLOOD WIDTH(FEET) =   25.09
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.49
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.81
  STREET FLOW TRAVEL TIME(MIN.) =   1.12   Tc(MIN.) =  21.75
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.298
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.19      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.64      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA AREA(ACRES) =    5.83      SUBAREA RUNOFF(CFS) =    9.42
  EFFECTIVE AREA(ACRES) =     62.74    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     62.74        PEAK FLOW RATE(CFS) =     100.75

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.35; 6HR = 1.80; 24HR = 3.39
```



```
  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.64   HALFSTREET FLOOD WIDTH(FEET) =  25.16
  FLOW VELOCITY(FEET/SEC.) =  7.53   DEPTH*VELOCITY(FT*FT/SEC.) =   4.84
  LONGEST FLOWPATH FROM NODE  21121.00 TO NODE  21126.00 =  5128.21 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021126.0 TO NODE LR021126.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  21.75
  RAINFALL INTENSITY(INCH/HR) =   2.30
  AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.69
  EFFECTIVE STREAM AREA(ACRES) =    62.74
  TOTAL STREAM AREA(ACRES) =    62.74
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    100.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021150.0 TO NODE LR021151.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   912.75
  ELEVATION DATA: UPSTREAM(FEET) =   1700.00  DOWNSTREAM(FEET) =   1685.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.318
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.953
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.53      0.75      0.70    56   15.22
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.32      0.75      0.60    56   14.32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA RUNOFF(CFS) =     15.00
  TOTAL AREA(ACRES) =      6.85   PEAK FLOW RATE(CFS) =     15.00

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.34; 6HR = 1.78; 24HR = 3.39

****************************************************************************
  FLOW PROCESS FROM NODE LR021151.0 TO NODE LR021152.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1685.00  DOWNSTREAM ELEVATION(FEET) = 1630.00
  STREET LENGTH(FEET) =   659.39   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00
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  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.59

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      27.55
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.41
    HALFSTREET FLOOD WIDTH(FEET) =   14.05
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.58
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.68
  STREET FLOW TRAVEL TIME(MIN.) =   1.67   Tc(MIN.) =  15.99
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.764
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       10.34      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.04      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   12.38      SUBAREA RUNOFF(CFS) =   25.10
  EFFECTIVE AREA(ACRES) =     19.23    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     19.23        PEAK FLOW RATE(CFS) =      38.93

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.34; 6HR = 1.78; 24HR = 3.39

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.45   HALFSTREET FLOOD WIDTH(FEET) =  16.16
  FLOW VELOCITY(FEET/SEC.) =  7.13   DEPTH*VELOCITY(FT*FT/SEC.) =   3.20
  LONGEST FLOWPATH FROM NODE  21150.00 TO NODE  21152.00 =  1572.14 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021152.0 TO NODE LR021153.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1630.00  DOWNSTREAM ELEVATION(FEET) = 1590.00
  STREET LENGTH(FEET) =   730.95   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
```



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  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.66

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      49.90
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.51
    HALFSTREET FLOOD WIDTH(FEET) =   18.38
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.66
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.38
  STREET FLOW TRAVEL TIME(MIN.) =   1.83   Tc(MIN.) =  17.82
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.590
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.40      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.41      0.75      0.60    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.11      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.79
  SUBAREA AREA(ACRES) =   11.92      SUBAREA RUNOFF(CFS) =   21.93
  EFFECTIVE AREA(ACRES) =     31.15    AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =     31.15        PEAK FLOW RATE(CFS) =      57.85

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.34; 6HR = 1.78; 24HR = 3.39

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.53   HALFSTREET FLOOD WIDTH(FEET) =  19.36
  FLOW VELOCITY(FEET/SEC.) =  7.03   DEPTH*VELOCITY(FT*FT/SEC.) =   3.71
  LONGEST FLOWPATH FROM NODE  21150.00 TO NODE  21153.00 =  2303.09 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021153.0 TO NODE LR021126.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1590.00  DOWNSTREAM ELEVATION(FEET) = 1570.00
  STREET LENGTH(FEET) =   807.57   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      65.10
    ***STREET FLOWING FULL***
```

```
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.61
  HALFSTREET FLOOD WIDTH(FEET) =   23.32
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.61
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.40
 STREET FLOW TRAVEL TIME(MIN.) =   2.40   Tc(MIN.) =  20.22
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.401
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        7.02      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.50      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
 SUBAREA AREA(ACRES) =    8.52      SUBAREA RUNOFF(CFS) =   14.50
 EFFECTIVE AREA(ACRES) =     39.67    AREA-AVERAGED Fm(INCH/HR) =  0.52
 AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.72
 TOTAL AREA(ACRES) =     39.67        PEAK FLOW RATE(CFS) =      67.04

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.34; 6HR = 1.78; 24HR = 3.39

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.61   HALFSTREET FLOOD WIDTH(FEET) =  23.63
 FLOW VELOCITY(FEET/SEC.) =  5.63   DEPTH*VELOCITY(FT*FT/SEC.) =   3.45
 LONGEST FLOWPATH FROM NODE  21150.00 TO NODE  21126.00 =  3110.66 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021126.0 TO NODE LR021126.0 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  20.22
 RAINFALL INTENSITY(INCH/HR) =   2.40
 AREA-AVERAGED Fm(INCH/HR) =  0.52
 AREA-AVERAGED Fp(INCH/HR) =  0.73
 AREA-AVERAGED Ap =  0.72
 EFFECTIVE STREAM AREA(ACRES) =    39.67
 TOTAL STREAM AREA(ACRES) =    39.67
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     67.04

 ** CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    100.75  21.75    2.298  0.75( 0.51) 0.69    62.7 LR021121.0
     2     67.04  20.22    2.401  0.73( 0.52) 0.72    39.7 LR021150.0

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
```



```
     1    166.11  20.22    2.401  0.74( 0.52) 0.70    98.0 LR021150.0
     2    164.13  21.75    2.298  0.74( 0.52) 0.70   102.4 LR021121.0

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    166.11    Tc(MIN.) =    20.22
 EFFECTIVE AREA(ACRES) =    98.00   AREA-AVERAGED Fm(INCH/HR) =  0.52
 AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.70
 TOTAL AREA(ACRES) =    102.41
 LONGEST FLOWPATH FROM NODE  21121.00 TO NODE  21126.00 =  5128.21 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021126.0 TO NODE LR021127.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1570.00  DOWNSTREAM ELEVATION(FEET) = 1557.00
 STREET LENGTH(FEET) =   322.81   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     168.51
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.75
  HALFSTREET FLOOD WIDTH(FEET) =   30.65
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.63
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.50
 STREET FLOW TRAVEL TIME(MIN.) =   0.62   Tc(MIN.) =  20.84
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.358
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        2.16      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.72      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
 SUBAREA AREA(ACRES) =    2.88      SUBAREA RUNOFF(CFS) =    4.80
 EFFECTIVE AREA(ACRES) =    100.88    AREA-AVERAGED Fm(INCH/HR) =  0.52
 AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.70
 TOTAL AREA(ACRES) =    105.29        PEAK FLOW RATE(CFS) =     167.09

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.34; 6HR = 1.79; 24HR = 3.39

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.75   HALFSTREET FLOOD WIDTH(FEET) =  30.53
```

```
  FLOW VELOCITY(FEET/SEC.) =  8.63   DEPTH*VELOCITY(FT*FT/SEC.) =   6.47

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.70
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.31
  PIPE-FLOW(CFS) =     41.85
  PIPEFLOW TRAVEL TIME(MIN.) =   0.40    Tc(MIN.) =  20.62
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.373
  SUBAREA AREA(ACRES) =    2.88      SUBAREA RUNOFF(CFS) =    4.84
  TOTAL AREA(ACRES) =    105.29        PEAK FLOW RATE(CFS) =    168.45

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.34; 6HR = 1.79; 24HR = 3.39
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  126.60
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.69
    HALFSTREET FLOOD WIDTH(FEET) =   27.41
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.03
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.53

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    168.45  20.62    2.373  0.74( 0.52) 0.70   100.9 LR021150.0
      2    166.38  22.15    2.273  0.74( 0.52) 0.70   105.3 LR021121.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    168.45  Tc(MIN.) =  20.62
  AREA-AVERAGED Fm(INCH/HR) =  0.52  AREA-AVERAGED Fp(INCH/HR) =  0.74
  AREA-AVERAGED Ap =  0.70  EFFECTIVE AREA(ACRES) =    100.88
  LONGEST FLOWPATH FROM NODE  21121.00 TO NODE  21127.00 =  5451.02 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021127.0 TO NODE LR021128.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1557.00  DOWNSTREAM(FEET) =   1535.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   354.44   CHANNEL SLOPE =  0.0621
  CHANNEL BASE(FEET) =    6.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    168.45
  FLOW VELOCITY(FEET/SEC.) =  11.40   FLOW DEPTH(FEET) =   1.61
  TRAVEL TIME(MIN.) =   0.52   Tc(MIN.) =  21.14
  LONGEST FLOWPATH FROM NODE  21121.00 TO NODE  21128.00 =  5805.46 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021128.0 TO NODE LR021128.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.14
```



```
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.337
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       10.17      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       45.95      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   56.12      SUBAREA RUNOFF(CFS) =   92.30
  EFFECTIVE AREA(ACRES) =    157.00   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =    161.41       PEAK FLOW RATE(CFS) =     257.56

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021128.0 TO NODE LR021129.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1535.00  DOWNSTREAM(FEET) =   1495.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1036.57   CHANNEL SLOPE =  0.0386
  CHANNEL BASE(FEET) =    6.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    257.56
  FLOW VELOCITY(FEET/SEC.) =  10.81   FLOW DEPTH(FEET) =   2.26
  TRAVEL TIME(MIN.) =   1.60   Tc(MIN.) =  22.74
  LONGEST FLOWPATH FROM NODE  21121.00 TO NODE  21129.00 =  6842.03 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021129.0 TO NODE LR021129.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  22.74
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.237
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       17.92      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   17.92      SUBAREA RUNOFF(CFS) =   28.85
  EFFECTIVE AREA(ACRES) =    174.92   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    179.33       PEAK FLOW RATE(CFS) =     272.28

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021129.0 TO NODE LR021129.0 IS CODE =  11
----------------------------------------------------------------------------
```

```
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
================================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    272.28  22.74    2.237  0.74( 0.51) 0.68   174.9 LR021150.0
      2    265.19  24.28    2.151  0.74( 0.51) 0.68   179.3 LR021121.0
  LONGEST FLOWPATH FROM NODE  21121.00 TO NODE  21129.00 =  6842.03 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    248.64  22.59    2.246  0.75( 0.50) 0.67   158.6 LR021100.0
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21129.00 =  8028.36 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    520.52  22.59    2.246  0.75( 0.51) 0.68   332.4 LR021100.0
      2    519.68  22.74    2.237  0.75( 0.51) 0.68   333.5 LR021150.0
      3    500.27  24.28    2.151  0.75( 0.51) 0.68   337.9 LR021121.0
    TOTAL AREA(ACRES) =    337.89

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      520.52  Tc(MIN.) =   22.591
  EFFECTIVE AREA(ACRES) =    332.35  AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    337.89
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21129.00 =  8028.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021129.0 TO NODE LR021129.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021129.0 TO NODE LR021130.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1495.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1460.00
  FLOW LENGTH(FEET) =  1595.06   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  72.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  72.0 INCH PIPE IS  50.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  24.81
  PIPE-FLOW(CFS) =    520.52
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.07    Tc(MIN.) =  23.66
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21130.00 =  9623.42 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021130.0 TO NODE LR021130.0 IS CODE =  81
----------------------------------------------------------------------------
```



```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  23.66
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.185
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B       64.12      0.75       0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   64.12      SUBAREA RUNOFF(CFS) =  100.17
  EFFECTIVE AREA(ACRES) =    396.47   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.67
  TOTAL AREA(ACRES) =    402.01       PEAK FLOW RATE(CFS) =     602.27

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021130.0 TO NODE LR021146.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1460.00  DOWNSTREAM(FEET) =   1403.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1317.93   CHANNEL SLOPE =  0.0432
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   4.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    602.27
  FLOW VELOCITY(FEET/SEC.) =  13.97   FLOW DEPTH(FEET) =   3.05
  TRAVEL TIME(MIN.) =   1.57   Tc(MIN.) =  25.23
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21146.00 = 10941.35 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021146.0 TO NODE LR021146.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  25.23
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.102
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B       22.28      0.75       0.60    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                  B        1.50      0.63       1.00    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
  SUBAREA AREA(ACRES) =   23.78      SUBAREA RUNOFF(CFS) =   35.13
  EFFECTIVE AREA(ACRES) =    420.25   AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.66
  TOTAL AREA(ACRES) =    425.79       PEAK FLOW RATE(CFS) =     607.89

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR021146.0 TO NODE LR021146.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  25.23
  RAINFALL INTENSITY(INCH/HR) =   2.10
  AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.66
  EFFECTIVE STREAM AREA(ACRES) =   420.25
  TOTAL STREAM AREA(ACRES) =   425.79
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    607.89

****************************************************************************
  FLOW PROCESS FROM NODE LR021140.0 TO NODE LR021141.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   286.67
  ELEVATION DATA: UPSTREAM(FEET) =   1460.00  DOWNSTREAM(FEET) =   1450.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.750
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.268
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.17      0.75      0.60    56    7.75
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =      7.46
  TOTAL AREA(ACRES) =      2.17   PEAK FLOW RATE(CFS) =      7.46

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021141.0 TO NODE LR021142.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1450.00  DOWNSTREAM ELEVATION(FEET) = 1445.00
  STREET LENGTH(FEET) =   752.60   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
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  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      13.19
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.47
    HALFSTREET FLOOD WIDTH(FEET) =   17.34
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.11
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.00
  STREET FLOW TRAVEL TIME(MIN.) =   5.94   Tc(MIN.) =  13.69
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.034
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.85      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    4.85      SUBAREA RUNOFF(CFS) =   11.28
  EFFECTIVE AREA(ACRES) =      7.02    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =      7.02        PEAK FLOW RATE(CFS) =      16.33

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.50   HALFSTREET FLOOD WIDTH(FEET) =  18.01
  FLOW VELOCITY(FEET/SEC.) =  2.26   DEPTH*VELOCITY(FT*FT/SEC.) =   1.13
  LONGEST FLOWPATH FROM NODE  21140.00 TO NODE  21142.00 =  1039.27 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021142.0 TO NODE LR021143.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1445.00  DOWNSTREAM ELEVATION(FEET) = 1430.00
  STREET LENGTH(FEET) =   604.30   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.85

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      25.52
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.47
    HALFSTREET FLOOD WIDTH(FEET) =   17.34
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.09
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.93
  STREET FLOW TRAVEL TIME(MIN.) =   2.47   Tc(MIN.) =  16.16
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 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.747
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        8.88      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =    8.88      SUBAREA RUNOFF(CFS) =   18.36
 EFFECTIVE AREA(ACRES) =     15.90    AREA-AVERAGED Fm(INCH/HR) =  0.45
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =     15.90        PEAK FLOW RATE(CFS) =      32.88

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.51   HALFSTREET FLOOD WIDTH(FEET) =  18.26
 FLOW VELOCITY(FEET/SEC.) =  4.44   DEPTH*VELOCITY(FT*FT/SEC.) =   2.25
 LONGEST FLOWPATH FROM NODE  21140.00 TO NODE  21143.00 =  1643.57 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021143.0 TO NODE LR021144.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1430.00  DOWNSTREAM ELEVATION(FEET) = 1413.00
 STREET LENGTH(FEET) =   592.37   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.82

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      38.69
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.52
   HALFSTREET FLOOD WIDTH(FEET) =   18.81
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.96
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.56
 STREET FLOW TRAVEL TIME(MIN.) =   1.99   Tc(MIN.) =  18.15
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.562
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        6.11      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =    6.11      SUBAREA RUNOFF(CFS) =   11.62
```



```
 EFFECTIVE AREA(ACRES) =     22.01    AREA-AVERAGED Fm(INCH/HR) =  0.45
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =     22.01        PEAK FLOW RATE(CFS) =      41.85

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.53   HALFSTREET FLOOD WIDTH(FEET) =  19.36
 FLOW VELOCITY(FEET/SEC.) =  5.09   DEPTH*VELOCITY(FT*FT/SEC.) =   2.68
 LONGEST FLOWPATH FROM NODE  21140.00 TO NODE  21144.00 =  2235.94 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021144.0 TO NODE LR021145.0 IS CODE =  33
----------------------------------------------------------------------------
 >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
 >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1413.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1409.00
 FLOW LENGTH(FEET) =    90.21   MANNING'S N =  0.013

 USER SPECIFIED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
 DEPTH OF FLOW IN  42.0 INCH PIPE IS  12.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  17.13
 PIPE-FLOW(CFS) =     41.85
 *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
 PIPEFLOW TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =  18.24
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.554
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       13.65      0.75      0.60    56
 COMMERCIAL                 B        1.61      0.75      0.10    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.55
 SUBAREA AREA(ACRES) =   15.26      SUBAREA RUNOFF(CFS) =   29.45
 EFFECTIVE AREA(ACRES) =     37.27    AREA-AVERAGED Fm(INCH/HR) =  0.43
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.58
 TOTAL AREA(ACRES) =     37.27        PEAK FLOW RATE(CFS) =     71.15

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

 STREET CROSS-SECTION INFORMATION:
 CURB HEIGHT(INCHES) =  6.0       STREET HALFWIDTH(FEET) = 18.00
 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   29.30
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
```

```
    STREET FLOW DEPTH(FEET) =  0.45
    HALFSTREET FLOOD WIDTH(FEET) =   16.32
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.27
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.38
  LONGEST FLOWPATH FROM NODE  21140.00 TO NODE  21145.00 =  2326.15 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021145.0 TO NODE LR021146.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1409.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1403.00
  FLOW LENGTH(FEET) =   538.70   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  24.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.87
  PIPE-FLOW(CFS) =     71.15
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.80    Tc(MIN.) =  19.05
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.488
  SUBAREA AREA(ACRES) =    0.00      SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =     37.27    AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.58
  TOTAL AREA(ACRES) =     37.27        PEAK FLOW RATE(CFS) =     71.15
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.38; 6HR = 1.88; 24HR = 3.39

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 32.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  *NOTE: ESTIMATED PEAK FLOW DEFAULTED TO UPSTREAM PEAK FLOW;
         STREET HYDRAULICS NOT COMPUTED*
  LONGEST FLOWPATH FROM NODE  21140.00 TO NODE  21146.00 =  2864.85 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021146.0 TO NODE LR021146.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  19.05
  RAINFALL INTENSITY(INCH/HR) =   2.49
  AREA-AVERAGED Fm(INCH/HR) =  0.43
```



```
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.58
  EFFECTIVE STREAM AREA(ACRES) =    37.27
  TOTAL STREAM AREA(ACRES) =    37.27
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     71.15

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    606.45  25.31    2.098  0.75( 0.49) 0.66   420.3 LR021100.0
      1    605.25  25.46    2.091  0.75( 0.49) 0.66   421.4 LR021150.0
      1    583.40  27.02    2.017  0.75( 0.49) 0.66   425.8 LR021121.0
      2     71.15  19.05    2.488  0.75( 0.43) 0.58    37.3 LR021140.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    638.58  19.05    2.488  0.75( 0.49) 0.65   353.5 LR021140.0
      2    664.09  25.31    2.098  0.75( 0.49) 0.66   457.5 LR021100.0
      3    662.63  25.46    2.091  0.75( 0.49) 0.66   458.6 LR021150.0
      4    638.24  27.02    2.017  0.75( 0.49) 0.66   463.1 LR021121.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    664.09    Tc(MIN.) =    25.31
  EFFECTIVE AREA(ACRES) =   457.52   AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.66
  TOTAL AREA(ACRES) =    463.06
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21146.00 = 10941.35 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021146.0 TO NODE LR021165.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1403.00  DOWNSTREAM(FEET) =   1393.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   424.11   CHANNEL SLOPE =  0.0236
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   4.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    664.09
  FLOW VELOCITY(FEET/SEC.) =  11.49   FLOW DEPTH(FEET) =   3.74
  TRAVEL TIME(MIN.) =   0.62   Tc(MIN.) =  25.93
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21165.00 = 11365.46 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021165.0 TO NODE LR021165.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021154.0 TO NODE LR021154.2 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
```

```
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   709.46
  ELEVATION DATA: UPSTREAM(FEET) =   1720.00  DOWNSTREAM(FEET) =   1680.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.117
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.637
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BROUSH"               B        8.73      0.61      1.00    66   17.34
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.90      0.75      0.60    56   10.12
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        0.18      0.75      0.70    56   10.76
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.62
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.96
  SUBAREA RUNOFF(CFS) =     26.84
  TOTAL AREA(ACRES) =      9.81   PEAK FLOW RATE(CFS) =     26.84

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.34; 6HR = 1.78; 24HR = 3.39

**************************************************************************
  FLOW PROCESS FROM NODE LR021154.2 TO NODE LR021154.4 IS CODE =  54
--------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1680.00  DOWNSTREAM(FEET) =   1620.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   614.72   CHANNEL SLOPE =  0.0976
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     26.84
  FLOW VELOCITY(FEET/SEC.) =   6.13   FLOW DEPTH(FEET) =   0.94
  TRAVEL TIME(MIN.) =   1.67   Tc(MIN.) =  11.79
  LONGEST FLOWPATH FROM NODE  21154.00 TO NODE  21154.40 =  1324.18 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE LR021154.4 TO NODE LR021154.4 IS CODE =  81
--------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN) =  11.79
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.319
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BROUSH"               B       15.02      0.61      1.00    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        4.09      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.17      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.64
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.93
  SUBAREA AREA(ACRES) =   19.28      SUBAREA RUNOFF(CFS) =   47.29
```



```
  EFFECTIVE AREA(ACRES) =     29.09   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.63  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =     29.09       PEAK FLOW RATE(CFS) =      71.32

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.34; 6HR = 1.78; 24HR = 3.39

**************************************************************************
  FLOW PROCESS FROM NODE LR021154.4 TO NODE LR021155.0 IS CODE =  54
--------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1620.00  DOWNSTREAM(FEET) =   1580.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   874.03   CHANNEL SLOPE =  0.0458
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     71.32
  FLOW VELOCITY(FEET/SEC.) =   5.91   FLOW DEPTH(FEET) =   1.55
  TRAVEL TIME(MIN.) =   2.46   Tc(MIN.) =  14.25
  LONGEST FLOWPATH FROM NODE  21154.00 TO NODE  21155.00 =  2198.21 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE LR021155.0 TO NODE LR021155.0 IS CODE =  81
--------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN) =  14.25
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.961
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BROUSH"               B       17.09      0.61      1.00    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        4.24      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.47      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.64
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.93
  SUBAREA AREA(ACRES) =   21.80      SUBAREA RUNOFF(CFS) =   46.47
  EFFECTIVE AREA(ACRES) =     50.89   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.63  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =     50.89       PEAK FLOW RATE(CFS) =     108.43

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.34; 6HR = 1.78; 24HR = 3.39

**************************************************************************
  FLOW PROCESS FROM NODE LR021155.0 TO NODE LR021156.0 IS CODE =  54
--------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1580.00  DOWNSTREAM(FEET) =   1545.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1194.85   CHANNEL SLOPE =  0.0293
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
```

```
  CHANNEL FLOW THRU SUBAREA(CFS) =    108.43
  FLOW VELOCITY(FEET/SEC.) =   5.54   FLOW DEPTH(FEET) =   1.98
  TRAVEL TIME(MIN.) =   3.60   Tc(MIN.) =  17.85
  LONGEST FLOWPATH FROM NODE  21154.00 TO NODE  21156.00 =  3393.06 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021156.0 TO NODE LR021156.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.85
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.587
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.30      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       39.32      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        7.87      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.72
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.74
  SUBAREA AREA(ACRES) =   51.49      SUBAREA RUNOFF(CFS) =   95.28
  EFFECTIVE AREA(ACRES) =    102.38   AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =    102.38       PEAK FLOW RATE(CFS) =     186.58

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021156.0 TO NODE LR021157.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1545.00  DOWNSTREAM ELEVATION(FEET) = 1500.00
  STREET LENGTH(FEET) =   796.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.68

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     200.47
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.75
    HALFSTREET FLOOD WIDTH(FEET) =   30.71
    AVERAGE FLOW VELOCITY(FEET/SEC.) =   10.23
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.72
```



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  STREET FLOW TRAVEL TIME(MIN.) =   1.30   Tc(MIN.) =  19.15
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.481
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       10.24      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.14      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
  SUBAREA AREA(ACRES) =   15.38      SUBAREA RUNOFF(CFS) =   27.78
  EFFECTIVE AREA(ACRES) =    117.76    AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =    117.76        PEAK FLOW RATE(CFS) =     204.53

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.76   HALFSTREET FLOOD WIDTH(FEET) =  30.95
  FLOW VELOCITY(FEET/SEC.) = 10.28   DEPTH*VELOCITY(FT*FT/SEC.) =   7.80

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.68
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.05
  PIPE-FLOW(CFS) =     67.86
  PIPEFLOW TRAVEL TIME(MIN.) =   0.78    Tc(MIN.) =  18.63
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.522
  SUBAREA AREA(ACRES) =   15.38      SUBAREA RUNOFF(CFS) =   28.35
  TOTAL AREA(ACRES) =    117.76        PEAK FLOW RATE(CFS) =    208.90

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  141.04
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.68
    HALFSTREET FLOOD WIDTH(FEET) =   26.80
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.34
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.31
  LONGEST FLOWPATH FROM NODE  21154.00 TO NODE  21157.00 =  4189.56 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021157.0 TO NODE LR021163.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1500.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1452.00
  FLOW LENGTH(FEET) =  1406.44   MANNING'S N =  0.013
```

```
  USER SPECIFIED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  32.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  23.39
  PIPE-FLOW(CFS) =    208.90
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.07    Tc(MIN.) =  19.70
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.439
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       19.67      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   19.67      SUBAREA RUNOFF(CFS) =   35.23
  EFFECTIVE AREA(ACRES) =    137.43    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.69  AREA-AVERAGED Ap =  0.78
  TOTAL AREA(ACRES) =    137.43        PEAK FLOW RATE(CFS) =    235.30

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  6.0       STREET HALFWIDTH(FEET) = 18.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   26.40
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.46
    HALFSTREET FLOOD WIDTH(FEET) =   16.55
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.62
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.11
  LONGEST FLOWPATH FROM NODE  21154.00 TO NODE  21163.00 =  5596.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021163.0 TO NODE LR021163.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  19.70
  RAINFALL INTENSITY(INCH/HR) =   2.44
  AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.69
  AREA-AVERAGED Ap =  0.78
  EFFECTIVE STREAM AREA(ACRES) =   137.43
  TOTAL STREAM AREA(ACRES) =   137.43
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    235.30

****************************************************************************
```



```
  FLOW PROCESS FROM NODE LR021160.0 TO NODE LR021161.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   381.26
  ELEVATION DATA: UPSTREAM(FEET) =   1545.00  DOWNSTREAM(FEET) =   1522.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.785
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.256
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.01      0.75      0.60    56    7.79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     17.17
  TOTAL AREA(ACRES) =      5.01   PEAK FLOW RATE(CFS) =     17.17

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021161.0 TO NODE LR021162.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1522.00  DOWNSTREAM(FEET) =   1500.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   409.32   CHANNEL SLOPE =  0.0537
  CHANNEL BASE(FEET) =    4.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     17.17
  FLOW VELOCITY(FEET/SEC.) =   5.80   FLOW DEPTH(FEET) =   0.58
  TRAVEL TIME(MIN.) =   1.18   Tc(MIN.) =   8.96
  LONGEST FLOWPATH FROM NODE  21160.00 TO NODE  21162.00 =   790.58 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021162.0 TO NODE LR021162.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =   8.96
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.912
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.71      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    4.71      SUBAREA RUNOFF(CFS) =   14.68
  EFFECTIVE AREA(ACRES) =      9.72   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =      9.72       PEAK FLOW RATE(CFS) =      30.29
```

```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021162.0 TO NODE LR021163.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1500.00  DOWNSTREAM(FEET) =   1452.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1513.07   CHANNEL SLOPE =  0.0317
  CHANNEL BASE(FEET) =    4.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     30.29
  FLOW VELOCITY(FEET/SEC.) =   5.71   FLOW DEPTH(FEET) =   0.91
  TRAVEL TIME(MIN.) =   4.41   Tc(MIN.) =  13.38
  LONGEST FLOWPATH FROM NODE  21160.00 TO NODE  21163.00 =  2303.65 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021163.0 TO NODE LR021163.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  13.38
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.076
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       14.70      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   14.70      SUBAREA RUNOFF(CFS) =   34.76
  EFFECTIVE AREA(ACRES) =     24.42   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     24.42       PEAK FLOW RATE(CFS) =      57.74

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021163.0 TO NODE LR021163.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  13.38
  RAINFALL INTENSITY(INCH/HR) =   3.08
  AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.60
  EFFECTIVE STREAM AREA(ACRES) =    24.42
  TOTAL STREAM AREA(ACRES) =    24.42
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     57.74

  ** CONFLUENCE DATA **
```



```
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    235.30  19.70    2.439  0.69( 0.54) 0.78   137.4 LR021154.0
      2     57.74  13.38    3.076  0.75( 0.45) 0.60    24.4 LR021160.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    271.07  13.38    3.076  0.70( 0.52) 0.74   117.7 LR021160.0
      2    279.04  19.70    2.439  0.69( 0.52) 0.75   161.8 LR021154.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    279.04    Tc(MIN.) =    19.70
  EFFECTIVE AREA(ACRES) =   161.85   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.69  AREA-AVERAGED Ap =  0.75
  TOTAL AREA(ACRES) =    161.85
  LONGEST FLOWPATH FROM NODE  21154.00 TO NODE  21163.00 =  5596.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021163.0 TO NODE LR021164.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1452.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1436.00
  FLOW LENGTH(FEET) =   667.61   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  40.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  21.71
  PIPE-FLOW(CFS) =    279.04
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.51    Tc(MIN.) =  20.21
  LONGEST FLOWPATH FROM NODE  21154.00 TO NODE  21164.00 =  6263.61 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021164.0 TO NODE LR021164.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  20.21
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.401
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       13.33      0.75      0.60    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        1.74      0.63      1.00    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.73
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.65
  SUBAREA AREA(ACRES) =   15.07      SUBAREA RUNOFF(CFS) =   26.20
  EFFECTIVE AREA(ACRES) =    176.92   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.74
```

```
  TOTAL AREA(ACRES) =    176.92       PEAK FLOW RATE(CFS) =     299.80

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021164.0 TO NODE LR021165.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1436.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1393.00
  FLOW LENGTH(FEET) =  1236.24   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  37.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  25.72
  PIPE-FLOW(CFS) =    299.80
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.80    Tc(MIN.) =  21.01
  LONGEST FLOWPATH FROM NODE  21154.00 TO NODE  21165.00 =  7499.85 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021165.0 TO NODE LR021165.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.01
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.346
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  SCHOOL                     B        1.72      0.75      0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       10.42      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   12.14      SUBAREA RUNOFF(CFS) =   20.73
  EFFECTIVE AREA(ACRES) =    189.06   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =    189.06       PEAK FLOW RATE(CFS) =     311.71

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021165.0 TO NODE LR021165.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    311.67  14.79    2.896  0.70( 0.51) 0.72   145.0 LR021160.0
      2    310.61  21.11    2.339  0.70( 0.51) 0.73   189.1 LR021154.0
  LONGEST FLOWPATH FROM NODE  21154.00 TO NODE  21165.00 =  7499.85 FEET.
```



```
  ** MEMORY BANK #  2 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    638.58  19.67    2.441  0.75( 0.49) 0.65   353.5 LR021140.0
      2    664.09  25.93    2.068  0.75( 0.49) 0.66   457.5 LR021100.0
      3    662.63  26.08    2.061  0.75( 0.49) 0.66   458.6 LR021150.0
      4    638.24  27.65    1.990  0.75( 0.49) 0.66   463.1 LR021121.0
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21165.00 = 11365.46 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    903.81  14.79    2.896  0.73( 0.49) 0.68   410.7 LR021160.0
      2    949.43  19.67    2.441  0.73( 0.50) 0.68   532.5 LR021140.0
      3    955.06  21.11    2.339  0.73( 0.50) 0.68   566.5 LR021154.0
      4    928.51  25.93    2.068  0.73( 0.50) 0.68   646.6 LR021100.0
      5    925.84  26.08    2.061  0.73( 0.50) 0.68   647.7 LR021150.0
      6    889.36  27.65    1.990  0.73( 0.50) 0.68   652.1 LR021121.0
    TOTAL AREA(ACRES) =    652.12

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      955.06  Tc(MIN.) =   21.110
  EFFECTIVE AREA(ACRES) =    566.52  AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    652.12
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21165.00 = 11365.46 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021165.0 TO NODE LR021165.0 IS CODE =  71
----------------------------------------------------------------------------
  >>>>>PEAK FLOW RATE ESTIMATOR CHANGED TO UNIT-HYDROGRAPH METHOD<<<<<
  >>>>>USING TIME-OF-CONCENTRATION OF LONGEST FLOWPATH<<<<<
============================================================================
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.43;30M= 0.88;1H= 1.16;3H= 1.87;6H= 2.53;24H= 5.01
  S-GRAPH: VALLEY(DEV.)= 91.4%;VALLEY(UNDEV.)/DESERT=  8.6%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.43; LAG(HR) = 0.35; Fm(INCH/HR) = 0.50; Ybar = 0.54
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 1.00; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    652.12
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21165.00 = 11365.46 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0355; Lca/L=0.4,n=.0318; Lca/L=0.5,n=.0292;Lca/L=0.6,n=.0273
  TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     136.97
  UNIT-HYDROGRAPH METHOD PEAK FLOW RATE(CFS) =    877.29
  TOTAL PEAK FLOW RATE(CFS) =    877.29 (SOURCE FLOW INCLUDED)
  RATIONAL METHOD PEAK FLOW RATE(CFS) =    955.06
   (UPSTREAM NODE PEAK FLOW RATE(CFS) =    955.06)
  PEAK FLOW RATE(CFS) USED =    955.06

****************************************************************************
  FLOW PROCESS FROM NODE LR021165.0 TO NODE LR021165.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR021165.0 TO NODE LR021166.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1393.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1357.00
  FLOW LENGTH(FEET) =  1083.24   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  84.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  84.0 INCH PIPE IS  57.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  33.77
  PIPE-FLOW(CFS) =    955.06
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.53    Tc(MIN.) =  26.46
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21166.00 = 12448.70 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021166.0 TO NODE LR021166.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  26.46
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.043
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       28.30      0.75      0.60    56
  SCHOOL                     B       18.42      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   46.72
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.43;30M= 0.88;1H= 1.16;3H= 1.88;6H= 2.55;24H= 5.04
  S-GRAPH: VALLEY(DEV.)= 92.0%;VALLEY(UNDEV.)/DESERT=  8.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.44; LAG(HR) = 0.35; Fm(INCH/HR) = 0.49; Ybar = 0.54
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 1.00; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    698.84
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21166.00 = 12448.70 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0337; Lca/L=0.4,n=.0302; Lca/L=0.5,n=.0277;Lca/L=0.6,n=.0259
  TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     148.94
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    935.88
  TOTAL AREA(ACRES) =    698.84       PEAK FLOW RATE(CFS) =     955.06
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021166.0 TO NODE LR021167.0 IS CODE =  42
----------------------------------------------------------------------------
```



```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1357.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1320.00
  FLOW LENGTH(FEET) =  1316.79   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  84.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  84.0 INCH PIPE IS  61.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  31.45
  PIPE-FLOW(CFS) =    955.06
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.70    Tc(MIN.) =  27.16
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21167.00 = 13765.49 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021167.0 TO NODE LR021167.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  27.16
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.011
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       42.55      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   42.55
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.43;30M= 0.89;1H= 1.17;3H= 1.89;6H= 2.56;24H= 5.07
  S-GRAPH: VALLEY(DEV.)= 92.4%;VALLEY(UNDEV.)/DESERT=  7.6%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.45; LAG(HR) = 0.36; Fm(INCH/HR) = 0.49; Ybar = 0.53
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 1.00; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    741.39
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21167.00 = 13765.49 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0318; Lca/L=0.4,n=.0285; Lca/L=0.5,n=.0262;Lca/L=0.6,n=.0244
  TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     159.83
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    979.67
  TOTAL AREA(ACRES) =    741.39       PEAK FLOW RATE(CFS) =     979.67

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021167.0 TO NODE LR021167.0 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 21167.dna
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =    741.39  TC(MIN.) =     27.16
```

```
  AREA-AVERAGED Fm(INCH/HR)=  0.49   Ybar =  0.53
  PEAK FLOW RATE(CFS)   =    979.67
================================================================================
================================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
         (c) Copyright 1983-2002 Advanced Engineering Software (aes)
             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                           County of San Bernardino
                         Transportation Flood Control

                          Water Resources Division

 ------------------------------------------------------------------------
  FILE NAME: LR0212ZZ.Z13
  TIME/DATE OF STUDY: 09:23 09/29/2004
 ========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
 ========================================================================
                     --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.2490

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)     (n)
===  =====  ========  =================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
```



```
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


 ************************************************************************
  FLOW PROCESS FROM NODE LR021200.0 TO NODE LR021201.0 IS CODE =  21
 ------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
 ========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   569.96
  ELEVATION DATA: UPSTREAM(FEET) =   1740.00  DOWNSTREAM(FEET) =   1707.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.219
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.843
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  SCHOOL                     B        0.54      0.75       0.60    56    9.22
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.10      0.75       0.60    56    9.22
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.38      0.75       0.70    56    9.80
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA RUNOFF(CFS) =     18.09
  TOTAL AREA(ACRES) =      6.02   PEAK FLOW RATE(CFS) =     18.09

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

 ************************************************************************
  FLOW PROCESS FROM NODE LR021201.0 TO NODE LR021202.0 IS CODE =  63
 ------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
 ========================================================================
  UPSTREAM ELEVATION(FEET) = 1707.00  DOWNSTREAM ELEVATION(FEET) = 1695.00
  STREET LENGTH(FEET) =   243.63   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
```

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  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.74

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      22.19
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.44
    HALFSTREET FLOOD WIDTH(FEET) =   14.02
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.15
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.26
  STREET FLOW TRAVEL TIME(MIN.) =   0.79   Tc(MIN.) =  10.01
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.658
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.00      0.75      0.60    56
  SCHOOL                     B        1.16      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        0.69      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.62
  SUBAREA AREA(ACRES) =    2.85      SUBAREA RUNOFF(CFS) =    8.19
  EFFECTIVE AREA(ACRES) =      8.87    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.66
  TOTAL AREA(ACRES) =      8.87        PEAK FLOW RATE(CFS) =      25.28

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.46   HALFSTREET FLOOD WIDTH(FEET) =  14.84
  FLOW VELOCITY(FEET/SEC.) =  5.29   DEPTH*VELOCITY(FT*FT/SEC.) =   2.41
  LONGEST FLOWPATH FROM NODE  21200.00 TO NODE  21202.00 =   813.59 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021202.0 TO NODE LR021203.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1695.00  DOWNSTREAM ELEVATION(FEET) = 1675.00
  STREET LENGTH(FEET) =   482.35   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.77
```



```
    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      37.89
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.52
    HALFSTREET FLOOD WIDTH(FEET) =   18.12
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.46
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.84
  STREET FLOW TRAVEL TIME(MIN.) =   1.47   Tc(MIN.) =  11.48
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.369
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        8.92      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.90      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    9.82      SUBAREA RUNOFF(CFS) =   25.21
  EFFECTIVE AREA(ACRES) =     18.69    AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.67
  TOTAL AREA(ACRES) =     18.69        PEAK FLOW RATE(CFS) =      48.17

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.56   HALFSTREET FLOOD WIDTH(FEET) =  19.94
  FLOW VELOCITY(FEET/SEC.) =  5.78   DEPTH*VELOCITY(FT*FT/SEC.) =   3.22
  LONGEST FLOWPATH FROM NODE  21200.00 TO NODE  21203.00 =  1295.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021203.0 TO NODE LR021204.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1675.00  DOWNSTREAM ELEVATION(FEET) = 1638.00
  STREET LENGTH(FEET) =   756.35   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.74

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      59.22
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.58
    HALFSTREET FLOOD WIDTH(FEET) =   20.93
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.48
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.74
  STREET FLOW TRAVEL TIME(MIN.) =   1.95   Tc(MIN.) =  13.43
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.067
```

```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        7.90      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.70      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    9.60      SUBAREA RUNOFF(CFS) =   22.09
  EFFECTIVE AREA(ACRES) =     28.29    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     28.29        PEAK FLOW RATE(CFS) =      65.18

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.59   HALFSTREET FLOOD WIDTH(FEET) =  21.69
  FLOW VELOCITY(FEET/SEC.) =  6.66   DEPTH*VELOCITY(FT*FT/SEC.) =   3.94
  LONGEST FLOWPATH FROM NODE  21200.00 TO NODE  21204.00 =  2052.29 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021204.0 TO NODE LR021205.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1638.00  DOWNSTREAM ELEVATION(FEET) = 1633.00
  STREET LENGTH(FEET) =   323.24   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.99

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      73.61
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.72
    HALFSTREET FLOOD WIDTH(FEET) =   28.62
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.55
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.27
  STREET FLOW TRAVEL TIME(MIN.) =   1.18   Tc(MIN.) =  14.61
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.915
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.52      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.27      0.75      0.60    56
```



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  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    7.79      SUBAREA RUNOFF(CFS) =   16.85
  EFFECTIVE AREA(ACRES) =     36.08    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     36.08        PEAK FLOW RATE(CFS) =      78.17

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.73   HALFSTREET FLOOD WIDTH(FEET) =  29.17
  FLOW VELOCITY(FEET/SEC.) =  4.65   DEPTH*VELOCITY(FT*FT/SEC.) =   3.40
  LONGEST FLOWPATH FROM NODE  21200.00 TO NODE  21205.00 =  2375.53 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021205.0 TO NODE LR021206.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1633.00  DOWNSTREAM ELEVATION(FEET) = 1629.00
  STREET LENGTH(FEET) =   199.37   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.92

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      83.83
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.72
    HALFSTREET FLOOD WIDTH(FEET) =   28.62
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.19
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.73
  STREET FLOW TRAVEL TIME(MIN.) =   0.64   Tc(MIN.) =  15.25
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.841
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.19      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.19      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    5.38      SUBAREA RUNOFF(CFS) =   11.30
  EFFECTIVE AREA(ACRES) =     41.46    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     41.46        PEAK FLOW RATE(CFS) =      87.07
```

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  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.73   HALFSTREET FLOOD WIDTH(FEET) =  28.93
  FLOW VELOCITY(FEET/SEC.) =  5.27   DEPTH*VELOCITY(FT*FT/SEC.) =   3.82
  LONGEST FLOWPATH FROM NODE  21200.00 TO NODE  21206.00 =  2574.90 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021206.0 TO NODE LR021207.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1629.00  DOWNSTREAM ELEVATION(FEET) = 1610.00
  STREET LENGTH(FEET) =   607.72   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.83

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      93.43
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.70
    HALFSTREET FLOOD WIDTH(FEET) =   27.59
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.23
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.35
  STREET FLOW TRAVEL TIME(MIN.) =   1.63   Tc(MIN.) =  16.88
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.673
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.03      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.49      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    6.52      SUBAREA RUNOFF(CFS) =   12.72
  EFFECTIVE AREA(ACRES) =     47.98    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     47.98        PEAK FLOW RATE(CFS) =      93.53

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.70   HALFSTREET FLOOD WIDTH(FEET) =  27.59
  FLOW VELOCITY(FEET/SEC.) =  6.24   DEPTH*VELOCITY(FT*FT/SEC.) =   4.36
  LONGEST FLOWPATH FROM NODE  21200.00 TO NODE  21207.00 =  3182.62 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR021207.0 TO NODE LR021208.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1610.00  DOWNSTREAM ELEVATION(FEET) = 1590.00
  STREET LENGTH(FEET) =   532.97   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.79

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     100.90
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.70
    HALFSTREET FLOOD WIDTH(FEET) =   27.46
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.79
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.72
  STREET FLOW TRAVEL TIME(MIN.) =   1.31   Tc(MIN.) =  18.19
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.556
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.92      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.09      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    8.01      SUBAREA RUNOFF(CFS) =   14.73
  EFFECTIVE AREA(ACRES) =     55.99    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     55.99        PEAK FLOW RATE(CFS) =     103.20

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.70   HALFSTREET FLOOD WIDTH(FEET) =  27.65
  FLOW VELOCITY(FEET/SEC.) =  6.85   DEPTH*VELOCITY(FT*FT/SEC.) =   4.79
  LONGEST FLOWPATH FROM NODE  21200.00 TO NODE  21208.00 =  3715.59 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021208.0 TO NODE LR021209.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
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```
 UPSTREAM ELEVATION(FEET) = 1590.00  DOWNSTREAM ELEVATION(FEET) = 1550.00
 STREET LENGTH(FEET) =   677.51   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.72

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     106.67
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.67
   HALFSTREET FLOOD WIDTH(FEET) =   25.38
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.04
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.35
 STREET FLOW TRAVEL TIME(MIN.) =   1.40   Tc(MIN.) =  19.59
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.445
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.99      0.75      0.60    56
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        2.98      0.75      0.70    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
 SUBAREA AREA(ACRES) =    3.97      SUBAREA RUNOFF(CFS) =    6.93
 EFFECTIVE AREA(ACRES) =     59.96    AREA-AVERAGED Fm(INCH/HR) =  0.51
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
 TOTAL AREA(ACRES) =     59.96        PEAK FLOW RATE(CFS) =     104.51

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.66   HALFSTREET FLOOD WIDTH(FEET) =  25.15
 FLOW VELOCITY(FEET/SEC.) =  8.02   DEPTH*VELOCITY(FT*FT/SEC.) =   5.30
 LONGEST FLOWPATH FROM NODE  21200.00 TO NODE  21209.00 =  4393.10 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021209.0 TO NODE LR021215.0 IS CODE =  48
----------------------------------------------------------------------------
 >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1550.00  DOWNSTREAM(FEET) =  1520.00
 FLOW LENGTH(FEET) =   978.51   MANNING'S N =  0.014
 GIVEN BOX BASEWIDTH(FEET) =   4.00   GIVEN BOX HEIGHT(FEET) =   2.00
 FLOWDEPTH IN BOX IS  1.54 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  16.92
 BOX-FLOW(CFS) =    104.51
 BOX-FLOW TRAVEL TIME(MIN.) =   0.96    Tc(MIN.) =  20.55
 LONGEST FLOWPATH FROM NODE  21200.00 TO NODE  21215.00 =  5371.61 FEET.
```



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****************************************************************************
 FLOW PROCESS FROM NODE LR021215.0 TO NODE LR021215.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  20.55
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.375
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        5.58      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =    5.58      SUBAREA RUNOFF(CFS) =    9.68
 EFFECTIVE AREA(ACRES) =     65.54   AREA-AVERAGED Fm(INCH/HR) =  0.50
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.67
 TOTAL AREA(ACRES) =     65.54       PEAK FLOW RATE(CFS) =     110.44

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
 FLOW PROCESS FROM NODE LR021215.0 TO NODE LR021215.0 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE LR021213.3 TO NODE LR021213.4 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   760.53
 ELEVATION DATA: UPSTREAM(FEET) =   1700.00  DOWNSTREAM(FEET) =   1690.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.918
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.001
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 SCHOOL                     B        8.73      0.75      0.60    56   13.92
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.08      0.75      0.60    56   13.92
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA RUNOFF(CFS) =     22.54
 TOTAL AREA(ACRES) =      9.81   PEAK FLOW RATE(CFS) =     22.54

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.54

****************************************************************************
 FLOW PROCESS FROM NODE LR021213.4 TO NODE LR021213.5 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
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 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
================================================================================
 UPSTREAM ELEVATION(FEET) = 1690.00  DOWNSTREAM ELEVATION(FEET) = 1640.00
 STREET LENGTH(FEET) =  1952.61   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      39.68
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.53
   HALFSTREET FLOOD WIDTH(FEET) =   19.36
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.82
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.54
 STREET FLOW TRAVEL TIME(MIN.) =   6.75   Tc(MIN.) =  20.66
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.368
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 SCHOOL                     B        3.65      0.75      0.60    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        4.28      0.75      0.60    56
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B       12.18      0.75      0.70    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.66
 SUBAREA AREA(ACRES) =   20.11      SUBAREA RUNOFF(CFS) =   33.91
 EFFECTIVE AREA(ACRES) =     29.92    AREA-AVERAGED Fm(INCH/HR) =  0.48
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.64
 TOTAL AREA(ACRES) =     29.92        PEAK FLOW RATE(CFS) =      50.85

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.54

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.56   HALFSTREET FLOOD WIDTH(FEET) =  21.19
 FLOW VELOCITY(FEET/SEC.) =  5.24   DEPTH*VELOCITY(FT*FT/SEC.) =   2.95
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L = 1952.6 FT WITH ELEVATION-DROP =  50.0 FT, IS   38.0 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21213.50
 LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21213.50 =  2713.14 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021213.5 TO NODE LR021214.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
================================================================================
 UPSTREAM ELEVATION(FEET) = 1640.00  DOWNSTREAM ELEVATION(FEET) = 1540.00
```



```
 STREET LENGTH(FEET) =  2138.50   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.69

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      62.24
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.55
   HALFSTREET FLOOD WIDTH(FEET) =   20.46
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.84
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.76
 STREET FLOW TRAVEL TIME(MIN.) =   5.21   Tc(MIN.) =  25.88
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.069
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B       14.39      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.85      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
 SUBAREA AREA(ACRES) =   16.24      SUBAREA RUNOFF(CFS) =   22.71
 EFFECTIVE AREA(ACRES) =     46.16    AREA-AVERAGED Fm(INCH/HR) =  0.49
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.66
 TOTAL AREA(ACRES) =     46.16        PEAK FLOW RATE(CFS) =      65.51

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.54

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.56   HALFSTREET FLOOD WIDTH(FEET) =  20.82
 FLOW VELOCITY(FEET/SEC.) =  6.97   DEPTH*VELOCITY(FT*FT/SEC.) =   3.88
 LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21214.00 =  4851.64 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021214.0 TO NODE LR021214.0 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE LR021210.0 TO NODE LR021211.0 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   788.20
 ELEVATION DATA: UPSTREAM(FEET) =   1650.00  DOWNSTREAM(FEET) =   1625.00
```

```
  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.838
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.307
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.70      0.75      0.70    56   12.59
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.64      0.75      0.60    56   11.84
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA RUNOFF(CFS) =     13.42
  TOTAL AREA(ACRES) =      5.34   PEAK FLOW RATE(CFS) =     13.42

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021211.0 TO NODE LR021212.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1625.00  DOWNSTREAM(FEET) =   1610.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   337.81   CHANNEL SLOPE =  0.0444
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     13.42
  FLOW VELOCITY(FEET/SEC.) =   3.84   FLOW DEPTH(FEET) =   0.84
  TRAVEL TIME(MIN.) =   1.47   Tc(MIN.) =  13.31
  LONGEST FLOWPATH FROM NODE  21210.00 TO NODE  21212.00 =  1126.01 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021212.0 TO NODE LR021212.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  13.31
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.083
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        7.68      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =    7.68      SUBAREA RUNOFF(CFS) =   17.69
  EFFECTIVE AREA(ACRES) =     13.02   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     13.02       PEAK FLOW RATE(CFS) =      30.04

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021212.0 TO NODE LR021213.0 IS CODE =  54
```



```
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1610.00  DOWNSTREAM(FEET) =   1592.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   463.88   CHANNEL SLOPE =  0.0388
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  10.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     30.04
  FLOW VELOCITY(FEET/SEC.) =   3.79   FLOW DEPTH(FEET) =   0.89
  TRAVEL TIME(MIN.) =   2.04   Tc(MIN.) =  15.34
  LONGEST FLOWPATH FROM NODE  21210.00 TO NODE  21213.00 =  1589.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021213.0 TO NODE LR021213.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  15.34
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.831
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.46      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.60      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    6.06      SUBAREA RUNOFF(CFS) =   12.62
  EFFECTIVE AREA(ACRES) =     19.08   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     19.08       PEAK FLOW RATE(CFS) =      39.70

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.00; 30M = 0.00; 1HR = 0.00; 3HR = 0.00; 6HR = 0.00; 24HR = 0.00

****************************************************************************
  FLOW PROCESS FROM NODE LR021213.0 TO NODE LR021213.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.34
  RAINFALL INTENSITY(INCH/HR) =   2.83
  AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.69
  EFFECTIVE STREAM AREA(ACRES) =    19.08
  TOTAL STREAM AREA(ACRES) =    19.08
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     39.70

****************************************************************************
  FLOW PROCESS FROM NODE LR021213.1 TO NODE LR021213.2 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
```

```
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   686.22
  ELEVATION DATA: UPSTREAM(FEET) =   1642.00  DOWNSTREAM(FEET) =   1610.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.369
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.581
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  PUBLIC PARK                B        1.60      0.75      0.85    56   12.16
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.75      0.75      0.70    56   11.02
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.25      0.75      0.60    56   10.37
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.76
  SUBAREA RUNOFF(CFS) =      9.76
  TOTAL AREA(ACRES) =      3.60   PEAK FLOW RATE(CFS) =      9.76

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.54

******************************************************************************
  FLOW PROCESS FROM NODE LR021213.2 TO NODE LR021213.0 IS CODE =  63
------------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
==============================================================================
  UPSTREAM ELEVATION(FEET) = 1610.00  DOWNSTREAM ELEVATION(FEET) = 1592.00
  STREET LENGTH(FEET) =   944.44   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      14.39
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.42
    HALFSTREET FLOOD WIDTH(FEET) =   14.60
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.20
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.34
  STREET FLOW TRAVEL TIME(MIN.) =   4.92   Tc(MIN.) =  15.29
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.836
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        0.14      0.75      0.85    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.29      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
```



```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =      4.43      SUBAREA RUNOFF(CFS) =      9.21
  EFFECTIVE AREA(ACRES) =      8.03    AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =      8.03        PEAK FLOW RATE(CFS) =      16.56

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.54

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.43   HALFSTREET FLOOD WIDTH(FEET) =  15.38
  FLOW VELOCITY(FEET/SEC.) =  3.33   DEPTH*VELOCITY(FT*FT/SEC.) =   1.45
  LONGEST FLOWPATH FROM NODE  21213.10 TO NODE  21213.00 =  1630.66 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE LR021213.0 TO NODE LR021213.0 IS CODE =   1
------------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.29
  RAINFALL INTENSITY(INCH/HR) =   2.84
  AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.73
  EFFECTIVE STREAM AREA(ACRES) =     8.03
  TOTAL STREAM AREA(ACRES) =     8.03
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.56

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     39.70  15.34    2.831  0.75( 0.52) 0.69    19.1 LR021210.0
      2     16.56  15.29    2.836  0.75( 0.55) 0.73     8.0 LR021213.1

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     56.22  15.29    2.836  0.75( 0.53) 0.70    27.0 LR021213.1
      2     56.22  15.34    2.831  0.75( 0.53) 0.70    27.1 LR021210.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     56.22    Tc(MIN.) =    15.29
  EFFECTIVE AREA(ACRES) =    27.05   AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     27.11
  LONGEST FLOWPATH FROM NODE  21213.10 TO NODE  21213.00 =  1630.66 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE LR021213.0 TO NODE LR021214.0 IS CODE =  54
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
```

```
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1592.00  DOWNSTREAM(FEET) =   1540.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   580.67   CHANNEL SLOPE =  0.0896
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  10.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     56.22
  FLOW VELOCITY(FEET/SEC.) =   6.05   FLOW DEPTH(FEET) =   0.96
  TRAVEL TIME(MIN.) =   1.60   Tc(MIN.) =  16.89
  LONGEST FLOWPATH FROM NODE  21213.10 TO NODE  21214.00 =  2211.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021214.0 TO NODE LR021214.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  16.89
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.672
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.04      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.60      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    4.64      SUBAREA RUNOFF(CFS) =    9.01
  EFFECTIVE AREA(ACRES) =     31.69   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     31.75       PEAK FLOW RATE(CFS) =      61.23

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.54

****************************************************************************
  FLOW PROCESS FROM NODE LR021214.0 TO NODE LR021214.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     61.23  16.89    2.672  0.75( 0.52) 0.70    31.7 LR021213.1
      2     61.22  16.94    2.667  0.75( 0.52) 0.70    31.8 LR021210.0
  LONGEST FLOWPATH FROM NODE  21213.10 TO NODE  21214.00 =  2211.33 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     65.51  25.88    2.069  0.75( 0.49) 0.66    46.2 LR021213.3
  LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21214.00 =  4851.64 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    120.36  16.89    2.672  0.75( 0.51) 0.68    61.8 LR021213.1
      2    120.39  16.94    2.667  0.75( 0.51) 0.68    62.0 LR021210.0
```



```
      3    109.63  25.88    2.069  0.75( 0.51) 0.68    77.9 LR021213.3
    TOTAL AREA(ACRES) =     77.91

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     120.39  Tc(MIN.) =   16.944
  EFFECTIVE AREA(ACRES) =     61.98  AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     77.91
  LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21214.00 =  4851.64 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021214.0 TO NODE LR021214.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021214.0 TO NODE LR021215.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1540.00  DOWNSTREAM ELEVATION(FEET) = 1520.00
  STREET LENGTH(FEET) =   601.35   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     129.12
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.71
    HALFSTREET FLOOD WIDTH(FEET) =   28.70
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.51
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.36
  STREET FLOW TRAVEL TIME(MIN.) =   1.34   Tc(MIN.) =  18.28
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.549
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.90      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        8.64      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    9.54      SUBAREA RUNOFF(CFS) =   17.45
  EFFECTIVE AREA(ACRES) =     71.52   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     87.45       PEAK FLOW RATE(CFS) =     131.22
```

```
 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.42

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.72   HALFSTREET FLOOD WIDTH(FEET) =  28.88
 FLOW VELOCITY(FEET/SEC.) =  7.54   DEPTH*VELOCITY(FT*FT/SEC.) =   5.41

 *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
        THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.70
 SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
 ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
 ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
 ASSUME FULL-FLOWING PIPELINE
 PIPE-FLOW VELOCITY(FEET/SEC.) =  12.10
 PIPE-FLOW(CFS) =     38.03
 PIPEFLOW TRAVEL TIME(MIN.) =   0.83    Tc(MIN.) =  17.77
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.592
 SUBAREA AREA(ACRES) =    9.54      SUBAREA RUNOFF(CFS) =   17.82
 TOTAL AREA(ACRES) =     87.45        PEAK FLOW RATE(CFS) =    134.01

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 3.42
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   95.98
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.65
   HALFSTREET FLOOD WIDTH(FEET) =   25.58
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.94
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.53

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    134.01  17.72    2.596  0.75( 0.51) 0.68    71.4 LR021213.1
     2    134.01  17.77    2.592  0.75( 0.51) 0.68    71.5 LR021210.0
     3    119.91  26.70    2.030  0.75( 0.51) 0.68    87.5 LR021213.3
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    134.01  Tc(MIN.) =  17.77
 AREA-AVERAGED Fm(INCH/HR) =  0.51  AREA-AVERAGED Fp(INCH/HR) =  0.75
 AREA-AVERAGED Ap =  0.68  EFFECTIVE AREA(ACRES) =     71.52
 LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21215.00 =  5452.99 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021215.0 TO NODE LR021215.0 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    134.01  17.72    2.596  0.75( 0.51) 0.68    71.4 LR021213.1
     2    134.01  17.77    2.592  0.75( 0.51) 0.68    71.5 LR021210.0
     3    119.91  26.70    2.030  0.75( 0.51) 0.68    87.5 LR021213.3
 LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21215.00 =  5452.99 FEET.
```



```
 ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    110.44  20.55    2.375  0.75( 0.50) 0.67    65.5 LR021200.0
 LONGEST FLOWPATH FROM NODE  21200.00 TO NODE  21215.00 =  5371.61 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    240.47  17.72    2.596  0.75( 0.51) 0.68   127.9 LR021213.1
     2    240.55  17.77    2.592  0.75( 0.51) 0.68   128.2 LR021210.0
     3    240.06  20.55    2.375  0.75( 0.51) 0.68   142.0 LR021200.0
     4    209.98  26.70    2.030  0.75( 0.51) 0.68   153.0 LR021213.3
   TOTAL AREA(ACRES) =    152.99

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      240.55  Tc(MIN.) =   17.772
 EFFECTIVE AREA(ACRES) =    128.19  AREA-AVERAGED Fm(INCH/HR) =  0.51
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
 TOTAL AREA(ACRES) =    152.99
 LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21215.00 =  5452.99 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021215.0 TO NODE LR021215.0 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE LR021215.0 TO NODE LR021216.0 IS CODE =  48
----------------------------------------------------------------------------
 >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1520.00  DOWNSTREAM(FEET) =  1470.00
 FLOW LENGTH(FEET) =  1371.54   MANNING'S N =  0.014
 GIVEN BOX BASEWIDTH(FEET) =   6.00   GIVEN BOX HEIGHT(FEET) =   3.00
 FLOWDEPTH IN BOX IS  1.82 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  22.02
 BOX-FLOW(CFS) =    240.55
 BOX-FLOW TRAVEL TIME(MIN.) =   1.04    Tc(MIN.) =  18.81
 LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21216.00 =  6824.53 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021216.0 TO NODE LR021216.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  18.81
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.505
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"        B       23.70      0.75       0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =   23.70      SUBAREA RUNOFF(CFS) =   43.86
 EFFECTIVE AREA(ACRES) =    151.89   AREA-AVERAGED Fm(INCH/HR) =  0.50
```

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 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.67
 TOTAL AREA(ACRES) =    176.69       PEAK FLOW RATE(CFS) =     274.39

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    275.64  18.70    2.514  0.75( 0.50) 0.67   151.9 LR021210.0
     2    275.01  18.70    2.514  0.75( 0.50) 0.67   151.6 LR021213.1
     3    271.26  21.43    2.317  0.75( 0.50) 0.67   165.7 LR021200.0
     4    237.60  27.57    1.992  0.75( 0.50) 0.67   176.7 LR021213.3
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    275.01  Tc(MIN.) =  18.70
 AREA-AVERAGED Fm(INCH/HR) =  0.50  AREA-AVERAGED Fp(INCH/HR) =  0.75
 AREA-AVERAGED Ap =  0.67  EFFECTIVE AREA(ACRES) =    151.57

****************************************************************************
 FLOW PROCESS FROM NODE LR021216.0 TO NODE LR021217.0 IS CODE =  48
----------------------------------------------------------------------------
 >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1470.00  DOWNSTREAM(FEET) =  1415.00
 FLOW LENGTH(FEET) =  1351.25   MANNING'S N =  0.014
 GIVEN BOX BASEWIDTH(FEET) =   7.00   GIVEN BOX HEIGHT(FEET) =   3.00
 FLOWDEPTH IN BOX IS  1.69 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  23.31
 BOX-FLOW(CFS) =    275.64
 BOX-FLOW TRAVEL TIME(MIN.) =   0.97    Tc(MIN.) =  19.67
 LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21217.00 =  8175.78 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021217.0 TO NODE LR021217.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  19.67
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.439
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       12.77      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =   12.77      SUBAREA RUNOFF(CFS) =   22.87
 EFFECTIVE AREA(ACRES) =    164.34   AREA-AVERAGED Fm(INCH/HR) =  0.49
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.66
 TOTAL AREA(ACRES) =    189.46       PEAK FLOW RATE(CFS) =     287.53

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    288.81  19.57    2.447  0.75( 0.49) 0.66   164.3 LR021213.1
```



```
     2    288.86  19.61    2.443  0.75( 0.49) 0.66   164.7 LR021210.0
     3    284.41  22.25    2.265  0.75( 0.49) 0.66   178.5 LR021200.0
     4    249.47  28.38    1.957  0.75( 0.49) 0.66   189.5 LR021213.3
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    288.81  Tc(MIN.) =  19.57
 AREA-AVERAGED Fm(INCH/HR) =  0.49  AREA-AVERAGED Fp(INCH/HR) =  0.75
 AREA-AVERAGED Ap =  0.66  EFFECTIVE AREA(ACRES) =    164.34

****************************************************************************
 FLOW PROCESS FROM NODE LR021217.0 TO NODE LR021236.0 IS CODE =  48
----------------------------------------------------------------------------
 >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1415.00  DOWNSTREAM(FEET) =  1358.00
 FLOW LENGTH(FEET) =  1911.29   MANNING'S N =  0.014
 GIVEN BOX BASEWIDTH(FEET) =   8.00   GIVEN BOX HEIGHT(FEET) =   3.00
 FLOWDEPTH IN BOX IS  1.73 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  20.81
 BOX-FLOW(CFS) =    288.86
 BOX-FLOW TRAVEL TIME(MIN.) =   1.53    Tc(MIN.) =  21.10
 LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21236.00 = 10087.07 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021236.0 TO NODE LR021236.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  21.10
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.338
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       19.73      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =   19.73      SUBAREA RUNOFF(CFS) =   33.56
 EFFECTIVE AREA(ACRES) =    184.07   AREA-AVERAGED Fm(INCH/HR) =  0.49
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.66
 TOTAL AREA(ACRES) =    209.19       PEAK FLOW RATE(CFS) =     306.24

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    308.17  20.98    2.346  0.75( 0.49) 0.65   184.4 LR021210.0
     2    307.27  21.02    2.344  0.75( 0.49) 0.65   184.1 LR021213.1
     3    303.10  23.55    2.189  0.75( 0.49) 0.65   198.2 LR021200.0
     4    266.55  29.67    1.906  0.75( 0.49) 0.65   209.2 LR021213.3
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    307.27  Tc(MIN.) =  21.02
 AREA-AVERAGED Fm(INCH/HR) =  0.49  AREA-AVERAGED Fp(INCH/HR) =  0.75
 AREA-AVERAGED Ap =  0.65  EFFECTIVE AREA(ACRES) =    184.07

****************************************************************************
 FLOW PROCESS FROM NODE LR021236.0 TO NODE LR021236.0 IS CODE =  10
```

```
------------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
==============================================================================

******************************************************************************
  FLOW PROCESS FROM NODE LR021220.0 TO NODE LR021221.0 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   765.06
  ELEVATION DATA: UPSTREAM(FEET) =   1620.00  DOWNSTREAM(FEET) =   1580.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.585
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.537
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  PUBLIC PARK                B        8.02      0.75      0.85    56   12.41
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        0.68      0.75      0.70    56   11.25
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.28      0.75      0.60    56   10.59
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.83
  SUBAREA RUNOFF(CFS) =     23.56
  TOTAL AREA(ACRES) =      8.98   PEAK FLOW RATE(CFS) =     23.56

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

******************************************************************************
  FLOW PROCESS FROM NODE LR021221.0 TO NODE LR021222.0 IS CODE =  54
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1580.00  DOWNSTREAM(FEET) =   1515.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   731.02   CHANNEL SLOPE =  0.0889
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     23.56
  FLOW VELOCITY(FEET/SEC.) =   3.29   FLOW DEPTH(FEET) =   0.38
  TRAVEL TIME(MIN.) =   3.71   Tc(MIN.) =  14.29
  LONGEST FLOWPATH FROM NODE  21220.00 TO NODE  21222.00 =  1496.08 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE LR021222.0 TO NODE LR021222.0 IS CODE =  81
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
  MAINLINE Tc(MIN) =  14.29
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.954
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
```



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  "3-4 DWELLINGS/ACRE"       B        0.88      0.75      0.60    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        9.97      0.63      1.00    65
  PUBLIC PARK                B        3.94      0.75      0.85    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.50      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.90
  SUBAREA AREA(ACRES) =   17.29      SUBAREA RUNOFF(CFS) =   36.53
  EFFECTIVE AREA(ACRES) =     26.27   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.88
  TOTAL AREA(ACRES) =     26.27       PEAK FLOW RATE(CFS) =      55.38

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

******************************************************************************
  FLOW PROCESS FROM NODE LR021222.0 TO NODE LR021223.0 IS CODE =  63
------------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
==============================================================================
  UPSTREAM ELEVATION(FEET) = 1515.00  DOWNSTREAM ELEVATION(FEET) = 1500.00
  STREET LENGTH(FEET) =   477.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.79

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      67.62
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.59
    HALFSTREET FLOOD WIDTH(FEET) =   22.65
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.15
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.65
  STREET FLOW TRAVEL TIME(MIN.) =   1.29   Tc(MIN.) =  15.59
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.804
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       11.55      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   11.55      SUBAREA RUNOFF(CFS) =   24.49
  EFFECTIVE AREA(ACRES) =     37.82    AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =     37.82        PEAK FLOW RATE(CFS) =      76.32

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
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  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.61   HALFSTREET FLOOD WIDTH(FEET) =  23.69
  FLOW VELOCITY(FEET/SEC.) =  6.38   DEPTH*VELOCITY(FT*FT/SEC.) =   3.92
  LONGEST FLOWPATH FROM NODE  21220.00 TO NODE  21223.00 =  1973.58 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021223.0 TO NODE LR021224.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1500.00  DOWNSTREAM ELEVATION(FEET) = 1480.00
  STREET LENGTH(FEET) =   869.02   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      92.02
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.68
    HALFSTREET FLOOD WIDTH(FEET) =   26.99
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.02
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.09
  STREET FLOW TRAVEL TIME(MIN.) =   2.41   Tc(MIN.) =  17.99
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.573
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        8.47      0.75      0.60    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        8.69      0.63      1.00    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.80
  SUBAREA AREA(ACRES) =   17.16      SUBAREA RUNOFF(CFS) =   31.38
  EFFECTIVE AREA(ACRES) =     54.98    AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     54.98        PEAK FLOW RATE(CFS) =      99.83

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.70   HALFSTREET FLOOD WIDTH(FEET) =  27.90
  FLOW VELOCITY(FEET/SEC.) =  6.12   DEPTH*VELOCITY(FT*FT/SEC.) =   4.27
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  869.0 FT WITH ELEVATION-DROP =  20.0 FT, IS   39.7 CFS,
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         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21224.00
  LONGEST FLOWPATH FROM NODE  21220.00 TO NODE  21224.00 =  2842.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021224.0 TO NODE LR021225.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1480.00  DOWNSTREAM ELEVATION(FEET) = 1473.00
  STREET LENGTH(FEET) =   240.38   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.88

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     103.49
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.73
    HALFSTREET FLOOD WIDTH(FEET) =   31.94
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.07
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.44
  STREET FLOW TRAVEL TIME(MIN.) =   0.66   Tc(MIN.) =  18.65
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.518
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.82      0.75      0.60    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        0.13      0.63      1.00    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.61
  SUBAREA AREA(ACRES) =    3.95      SUBAREA RUNOFF(CFS) =    7.33
  EFFECTIVE AREA(ACRES) =     58.93    AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.78
  TOTAL AREA(ACRES) =     58.93        PEAK FLOW RATE(CFS) =     104.44

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.73   HALFSTREET FLOOD WIDTH(FEET) =  32.25
  FLOW VELOCITY(FEET/SEC.) =  6.06   DEPTH*VELOCITY(FT*FT/SEC.) =   4.45
  LONGEST FLOWPATH FROM NODE  21220.00 TO NODE  21225.00 =  3082.98 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021225.0 TO NODE LR021233.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
```

```
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1473.00  DOWNSTREAM(FEET) =  1423.00
  FLOW LENGTH(FEET) =  1355.56   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   6.00   GIVEN BOX HEIGHT(FEET) =   1.50
  FLOWDEPTH IN BOX IS  1.03 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  16.98
  BOX-FLOW(CFS) =    104.44
  BOX-FLOW TRAVEL TIME(MIN.) =   1.33    Tc(MIN.) =  19.98
  LONGEST FLOWPATH FROM NODE  21220.00 TO NODE  21233.00 =  4438.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021233.0 TO NODE LR021233.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN) =  19.98
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.416
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       16.86      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   16.86      SUBAREA RUNOFF(CFS) =   29.85
  EFFECTIVE AREA(ACRES) =     75.79   AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.74
  TOTAL AREA(ACRES) =     75.79       PEAK FLOW RATE(CFS) =     128.88

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021233.0 TO NODE LR021233.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==========================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  19.98
  RAINFALL INTENSITY(INCH/HR) =   2.42
  AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.71
  AREA-AVERAGED Ap =  0.74
  EFFECTIVE STREAM AREA(ACRES) =    75.79
  TOTAL STREAM AREA(ACRES) =    75.79
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    128.88

****************************************************************************
  FLOW PROCESS FROM NODE LR021230.0 TO NODE LR021231.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   568.64
  ELEVATION DATA: UPSTREAM(FEET) =   1480.00  DOWNSTREAM(FEET) =   1450.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.384
```



```
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.802
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.58      0.75      0.60    56    9.38
  SCHOOL                     B        0.10      0.75      0.60    56    9.38
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     14.12
  TOTAL AREA(ACRES) =      4.68   PEAK FLOW RATE(CFS) =     14.12

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021231.0 TO NODE LR021232.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
==========================================================================
  UPSTREAM ELEVATION(FEET) = 1450.00  DOWNSTREAM ELEVATION(FEET) = 1430.00
  STREET LENGTH(FEET) =   739.29   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.86

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      19.90
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.46
    HALFSTREET FLOOD WIDTH(FEET) =   15.19
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.99
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.84
  STREET FLOW TRAVEL TIME(MIN.) =   3.09   Tc(MIN.) =  12.48
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.205
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.65      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    4.65      SUBAREA RUNOFF(CFS) =   11.53
  EFFECTIVE AREA(ACRES) =      9.33    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =      9.33        PEAK FLOW RATE(CFS) =      23.14

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
```

```
  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.48   HALFSTREET FLOOD WIDTH(FEET) =  16.19
  FLOW VELOCITY(FEET/SEC.) =  4.12   DEPTH*VELOCITY(FT*FT/SEC.) =   1.99
  LONGEST FLOWPATH FROM NODE  21230.00 TO NODE  21232.00 =  1307.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021232.0 TO NODE LR021233.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1430.00  DOWNSTREAM ELEVATION(FEET) = 1423.00
  STREET LENGTH(FEET) =   666.66   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      33.10
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.61
    HALFSTREET FLOOD WIDTH(FEET) =   22.51
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.15
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.92
  STREET FLOW TRAVEL TIME(MIN.) =   3.53   Tc(MIN.) =  16.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.760
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        9.55      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    9.55      SUBAREA RUNOFF(CFS) =   19.87
  EFFECTIVE AREA(ACRES) =     18.88    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     18.88        PEAK FLOW RATE(CFS) =      39.27

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.64   HALFSTREET FLOOD WIDTH(FEET) =  24.07
  FLOW VELOCITY(FEET/SEC.) =  3.28   DEPTH*VELOCITY(FT*FT/SEC.) =   2.10
  LONGEST FLOWPATH FROM NODE  21230.00 TO NODE  21233.00 =  1974.59 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021233.0 TO NODE LR021233.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
```



```
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  16.00
  RAINFALL INTENSITY(INCH/HR) =   2.76
  AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.60
  EFFECTIVE STREAM AREA(ACRES) =    18.88
  TOTAL STREAM AREA(ACRES) =    18.88
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     39.27

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    128.88  19.98    2.416  0.71( 0.53) 0.74    75.8 LR021220.0
      2     39.27  16.00    2.760  0.75( 0.45) 0.60    18.9 LR021230.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    161.29  16.00    2.760  0.72( 0.51) 0.71    79.6 LR021230.0
      2    162.30  19.98    2.416  0.72( 0.51) 0.71    94.7 LR021220.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    162.30    Tc(MIN.) =    19.98
  EFFECTIVE AREA(ACRES) =    94.67   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.71
  TOTAL AREA(ACRES) =     94.67
  LONGEST FLOWPATH FROM NODE  21220.00 TO NODE  21233.00 =  4438.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021233.0 TO NODE LR021234.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1423.00  DOWNSTREAM(FEET) =  1373.00
  FLOW LENGTH(FEET) =  1343.35   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   8.00   GIVEN BOX HEIGHT(FEET) =   1.50
  FLOWDEPTH IN BOX IS  1.10 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  18.51
  BOX-FLOW(CFS) =    162.30
  BOX-FLOW TRAVEL TIME(MIN.) =   1.21    Tc(MIN.) =  21.19
  LONGEST FLOWPATH FROM NODE  21220.00 TO NODE  21234.00 =  5781.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021234.0 TO NODE LR021234.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.19
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.332
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       30.53      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   30.53      SUBAREA RUNOFF(CFS) =   51.75
  EFFECTIVE AREA(ACRES) =    125.20   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =    125.20       PEAK FLOW RATE(CFS) =     206.92

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    213.66  17.15    2.648  0.72( 0.49) 0.68   110.1 LR021230.0
      2    207.81  21.07    2.340  0.72( 0.50) 0.69   125.2 LR021220.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    213.66  Tc(MIN.) =  17.15
  AREA-AVERAGED Fm(INCH/HR) =  0.49  AREA-AVERAGED Fp(INCH/HR) =  0.72
  AREA-AVERAGED Ap =  0.68  EFFECTIVE AREA(ACRES) =    110.11

****************************************************************************
  FLOW PROCESS FROM NODE LR021234.0 TO NODE LR021235.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1373.00  DOWNSTREAM(FEET) =  1359.00
  FLOW LENGTH(FEET) =   833.47   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  15.00   GIVEN BOX HEIGHT(FEET) =   1.50
  FLOWDEPTH IN BOX IS  1.08 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  13.21
  BOX-FLOW(CFS) =    213.66
  BOX-FLOW TRAVEL TIME(MIN.) =   1.05    Tc(MIN.) =  18.20
  LONGEST FLOWPATH FROM NODE  21220.00 TO NODE  21235.00 =  6615.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021235.0 TO NODE LR021235.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  18.20
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.555
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B        8.16      0.75      0.25    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        6.30      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
  SUBAREA AREA(ACRES) =   14.46      SUBAREA RUNOFF(CFS) =   29.33
  EFFECTIVE AREA(ACRES) =    124.57   AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.65
  TOTAL AREA(ACRES) =    139.66       PEAK FLOW RATE(CFS) =     233.78

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50
```



```
  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    234.27  18.15    2.559  0.73( 0.47) 0.65   124.6 LR021230.0
      2    226.60  22.03    2.278  0.72( 0.48) 0.66   139.7 LR021220.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    234.27  Tc(MIN.) =  18.15
  AREA-AVERAGED Fm(INCH/HR) =  0.47  AREA-AVERAGED Fp(INCH/HR) =  0.73
  AREA-AVERAGED Ap =  0.65  EFFECTIVE AREA(ACRES) =    124.57

****************************************************************************
  FLOW PROCESS FROM NODE LR021235.0 TO NODE LR021236.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1359.00  DOWNSTREAM(FEET) =  1358.00
  FLOW LENGTH(FEET) =   230.02   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  31.00   GIVEN BOX HEIGHT(FEET) =   1.50
  FLOWDEPTH IN BOX IS  1.07 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =   7.04
  BOX-FLOW(CFS) =    234.27
  BOX-FLOW TRAVEL TIME(MIN.) =   0.54    Tc(MIN.) =  18.70
  LONGEST FLOWPATH FROM NODE  21220.00 TO NODE  21236.00 =  6845.38 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021236.0 TO NODE LR021236.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    234.27  18.67    2.516  0.73( 0.47) 0.65   124.6 LR021230.0
      2    226.60  22.53    2.248  0.72( 0.48) 0.66   139.7 LR021220.0
  LONGEST FLOWPATH FROM NODE  21220.00 TO NODE  21236.00 =  6845.38 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    308.17  20.98    2.346  0.75( 0.49) 0.65   184.4 LR021210.0
      2    307.27  21.02    2.344  0.75( 0.49) 0.65   184.1 LR021213.1
      3    303.10  23.55    2.189  0.75( 0.49) 0.65   198.2 LR021200.0
      4    266.55  29.67    1.906  0.75( 0.49) 0.65   209.2 LR021213.3
  LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21236.00 = 10087.07 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    533.64  18.67    2.516  0.74( 0.48) 0.65   288.7 LR021230.0
      2    537.85  20.98    2.346  0.74( 0.48) 0.65   318.0 LR021210.0
      3    536.88  21.02    2.344  0.74( 0.48) 0.65   317.8 LR021213.1
      4    531.38  22.53    2.248  0.74( 0.48) 0.66   332.2 LR021220.0
      5    522.14  23.55    2.189  0.74( 0.48) 0.66   337.9 LR021200.0
      6    449.38  29.67    1.906  0.74( 0.48) 0.66   348.9 LR021213.3
    TOTAL AREA(ACRES) =    348.85
```

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      537.85  Tc(MIN.) =   20.981
  EFFECTIVE AREA(ACRES) =    317.99  AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.65
  TOTAL AREA(ACRES) =    348.85
  LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21236.00 = 10087.07 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021236.0 TO NODE LR021236.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021236.0 TO NODE LR021246.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1358.00  DOWNSTREAM(FEET) =  1311.00
  FLOW LENGTH(FEET) =  1973.53   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   9.00   GIVEN BOX HEIGHT(FEET) =   4.00
  FLOWDEPTH IN BOX IS  2.61 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  22.88
  BOX-FLOW(CFS) =    537.85
  BOX-FLOW TRAVEL TIME(MIN.) =   1.44    Tc(MIN.) =  22.42
  LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21246.00 = 12060.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021246.0 TO NODE LR021246.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  22.42
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.255
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       20.64      0.75      0.60    56
  COMMERCIAL                 B        3.79      0.75      0.10    56
  MOBILE HOME PARK           B       30.62      0.75      0.25    56
  PUBLIC PARK                B        2.31      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.39
  SUBAREA AREA(ACRES) =   57.36      SUBAREA RUNOFF(CFS) =  101.33
  EFFECTIVE AREA(ACRES) =    375.35   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.61
  TOTAL AREA(ACRES) =    406.21       PEAK FLOW RATE(CFS) =     608.53

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    611.27  20.03    2.412  0.74( 0.45) 0.61   346.0 LR021230.0
      2    612.15  22.23    2.266  0.74( 0.45) 0.61   375.2 LR021213.1
      3    611.71  22.26    2.264  0.74( 0.45) 0.61   375.3 LR021210.0
```



```
      4    605.24  23.68    2.182  0.74( 0.46) 0.62   389.5 LR021220.0
      5    595.42  24.65    2.130  0.74( 0.46) 0.62   395.2 LR021200.0
      6    514.73  30.76    1.865  0.74( 0.46) 0.62   406.2 LR021213.3
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    611.71  Tc(MIN.) =  22.26
  AREA-AVERAGED Fm(INCH/HR) =  0.45  AREA-AVERAGED Fp(INCH/HR) =  0.74
  AREA-AVERAGED Ap =  0.61  EFFECTIVE AREA(ACRES) =    375.35

****************************************************************************
  FLOW PROCESS FROM NODE LR021246.0 TO NODE LR021246.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  22.26
  RAINFALL INTENSITY(INCH/HR) =   2.26
  AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.74
  AREA-AVERAGED Ap =  0.61
  EFFECTIVE STREAM AREA(ACRES) =   375.35
  TOTAL STREAM AREA(ACRES) =   406.21
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    612.15

****************************************************************************
  FLOW PROCESS FROM NODE LR021240.0 TO NODE LR021241.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   726.27
  ELEVATION DATA: UPSTREAM(FEET) =   1550.00  DOWNSTREAM(FEET) =   1518.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.728
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.509
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        6.78      0.75      0.60    56   10.73
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     18.67
  TOTAL AREA(ACRES) =      6.78   PEAK FLOW RATE(CFS) =     18.67

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021241.0 TO NODE LR021242.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1518.00  DOWNSTREAM ELEVATION(FEET) = 1465.00
  STREET LENGTH(FEET) =  1349.95   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00
```

```
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.78

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      33.78
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.51
    HALFSTREET FLOOD WIDTH(FEET) =   17.47
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.21
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.64
  STREET FLOW TRAVEL TIME(MIN.) =   4.32   Tc(MIN.) =  15.05
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.864
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       13.82      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   13.82      SUBAREA RUNOFF(CFS) =   30.04
  EFFECTIVE AREA(ACRES) =     20.60    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     20.60        PEAK FLOW RATE(CFS) =      44.78

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.55   HALFSTREET FLOOD WIDTH(FEET) =  19.53
  FLOW VELOCITY(FEET/SEC.) =  5.59   DEPTH*VELOCITY(FT*FT/SEC.) =   3.07
  LONGEST FLOWPATH FROM NODE  21240.00 TO NODE  21242.00 =  2076.22 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021242.0 TO NODE LR021243.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1465.00  DOWNSTREAM ELEVATION(FEET) = 1420.00
  STREET LENGTH(FEET) =  1314.48   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.81
```



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    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      58.46
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.61
    HALFSTREET FLOOD WIDTH(FEET) =   22.34
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.64
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.41
  STREET FLOW TRAVEL TIME(MIN.) =   3.88   Tc(MIN.) =  18.93
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.496
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       14.61      0.75      0.60    56
  COMMERCIAL                 B        0.19      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.59
  SUBAREA AREA(ACRES) =   14.80      SUBAREA RUNOFF(CFS) =   27.33
  EFFECTIVE AREA(ACRES) =     35.40    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     35.40        PEAK FLOW RATE(CFS) =      65.27

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.62   HALFSTREET FLOOD WIDTH(FEET) =  23.28
  FLOW VELOCITY(FEET/SEC.) =  5.82   DEPTH*VELOCITY(FT*FT/SEC.) =   3.63
  LONGEST FLOWPATH FROM NODE  21240.00 TO NODE  21243.00 =  3390.70 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021243.0 TO NODE LR021244.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1420.00  DOWNSTREAM ELEVATION(FEET) = 1372.00
  STREET LENGTH(FEET) =  1306.02   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.79

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      77.14
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.65
    HALFSTREET FLOOD WIDTH(FEET) =   24.51
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.23
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.04
  STREET FLOW TRAVEL TIME(MIN.) =   3.50   Tc(MIN.) =  22.43
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.254
```

```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       14.60      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   14.60      SUBAREA RUNOFF(CFS) =   23.72
  EFFECTIVE AREA(ACRES) =     50.00    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     50.00        PEAK FLOW RATE(CFS) =      81.31

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.66   HALFSTREET FLOOD WIDTH(FEET) =  25.03
  FLOW VELOCITY(FEET/SEC.) =  6.30   DEPTH*VELOCITY(FT*FT/SEC.) =   4.15
  LONGEST FLOWPATH FROM NODE  21240.00 TO NODE  21244.00 =  4696.72 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021244.0 TO NODE LR021245.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1372.00  DOWNSTREAM ELEVATION(FEET) = 1330.00
  STREET LENGTH(FEET) =  1339.26   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.83

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      93.63
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.70
    HALFSTREET FLOOD WIDTH(FEET) =   27.59
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.24
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.36
  STREET FLOW TRAVEL TIME(MIN.) =   3.58   Tc(MIN.) =  26.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.063
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       11.63      0.75      0.60    56
  SCHOOL                     B        5.33      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   16.96      SUBAREA RUNOFF(CFS) =   24.64
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  EFFECTIVE AREA(ACRES) =     66.96    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     66.96        PEAK FLOW RATE(CFS) =      97.33

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.71   HALFSTREET FLOOD WIDTH(FEET) =  27.95
  FLOW VELOCITY(FEET/SEC.) =  6.32   DEPTH*VELOCITY(FT*FT/SEC.) =   4.46
  LONGEST FLOWPATH FROM NODE  21240.00 TO NODE  21245.00 =  6035.98 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021245.0 TO NODE LR021246.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1330.00  DOWNSTREAM ELEVATION(FEET) = 1311.00
  STREET LENGTH(FEET) =   939.73   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.92

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     102.82
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.76
    HALFSTREET FLOOD WIDTH(FEET) =   30.52
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.59
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.23
  STREET FLOW TRAVEL TIME(MIN.) =   2.80   Tc(MIN.) =  28.80
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.940
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.70      0.75      0.60    56
  MOBILE HOME PARK           B        4.66      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.38
  SUBAREA AREA(ACRES) =    7.36      SUBAREA RUNOFF(CFS) =   10.97
  EFFECTIVE AREA(ACRES) =     74.32    AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.58
  TOTAL AREA(ACRES) =     74.32        PEAK FLOW RATE(CFS) =     100.90

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
```

```
  DEPTH(FEET) = 0.75   HALFSTREET FLOOD WIDTH(FEET) =  30.33
  FLOW VELOCITY(FEET/SEC.) =  5.55   DEPTH*VELOCITY(FT*FT/SEC.) =   4.18
  LONGEST FLOWPATH FROM NODE  21240.00 TO NODE  21246.00 =  6975.71 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021246.0 TO NODE LR021246.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  28.80
  RAINFALL INTENSITY(INCH/HR) =   1.94
  AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.58
  EFFECTIVE STREAM AREA(ACRES) =    74.32
  TOTAL STREAM AREA(ACRES) =    74.32
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    100.90

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    611.27  20.03    2.412  0.74( 0.45) 0.61   346.0 LR021230.0
      1    612.15  22.23    2.266  0.74( 0.45) 0.61   375.2 LR021213.1
      1    611.71  22.26    2.264  0.74( 0.45) 0.61   375.3 LR021210.0
      1    605.24  23.68    2.182  0.74( 0.46) 0.62   389.5 LR021220.0
      1    595.42  24.65    2.130  0.74( 0.46) 0.62   395.2 LR021200.0
      1    514.73  30.76    1.865  0.74( 0.46) 0.62   406.2 LR021213.3
      2    100.90  28.80    1.940  0.75( 0.43) 0.58    74.3 LR021240.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    703.41  20.03    2.412  0.74( 0.45) 0.60   397.7 LR021230.0
      2    706.86  22.23    2.266  0.74( 0.45) 0.61   432.5 LR021213.1
      3    706.46  22.26    2.264  0.74( 0.45) 0.61   432.8 LR021210.0
      4    701.49  23.68    2.182  0.74( 0.45) 0.61   450.6 LR021220.0
      5    692.64  24.65    2.130  0.74( 0.45) 0.61   458.8 LR021200.0
      6    641.43  28.80    1.940  0.74( 0.45) 0.61   477.0 LR021240.0
      7    610.61  30.76    1.865  0.74( 0.45) 0.61   480.5 LR021213.3

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    706.86    Tc(MIN.) =    22.23
  EFFECTIVE AREA(ACRES) =   432.52   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.61
  TOTAL AREA(ACRES) =    480.53
  LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21246.00 = 12060.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021246.0 TO NODE LR021247.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
```



```
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1311.00  DOWNSTREAM(FEET) =  1290.00
  FLOW LENGTH(FEET) =  1258.84   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  12.00   GIVEN BOX HEIGHT(FEET) =   4.00
  FLOWDEPTH IN BOX IS  2.80 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  21.07
  BOX-FLOW(CFS) =    706.86
  BOX-FLOW TRAVEL TIME(MIN.) =   1.00    Tc(MIN.) =  23.22
  LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21247.00 = 13319.44 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021247.0 TO NODE LR021247.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  23.22
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.207
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       23.54      0.75       0.60    56
  COMMERCIAL                 B        1.26      0.75       0.10    56
  MOBILE HOME PARK           B        0.22      0.75       0.25    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        1.80      0.63       1.00    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.73
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   26.82      SUBAREA RUNOFF(CFS) =   42.63
  EFFECTIVE AREA(ACRES) =    459.34   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.61
  TOTAL AREA(ACRES) =    507.35       PEAK FLOW RATE(CFS) =     726.60

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    725.89  20.98    2.347  0.74( 0.45) 0.60   424.5 LR021230.0
      2    729.79  23.11    2.214  0.74( 0.45) 0.61   459.6 LR021210.0
      3    729.09  23.12    2.213  0.74( 0.45) 0.61   459.3 LR021213.1
      4    724.99  24.48    2.139  0.74( 0.45) 0.61   477.5 LR021220.0
      5    716.58  25.41    2.091  0.74( 0.45) 0.61   485.7 LR021200.0
      6    661.35  29.54    1.911  0.74( 0.45) 0.61   503.8 LR021240.0
      7    633.36  31.47    1.840  0.74( 0.45) 0.61   507.4 LR021213.3
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    729.09  Tc(MIN.) =  23.12
  AREA-AVERAGED Fm(INCH/HR) =  0.45  AREA-AVERAGED Fp(INCH/HR) =  0.74
  AREA-AVERAGED Ap =  0.61  EFFECTIVE AREA(ACRES) =    459.34

****************************************************************************
  FLOW PROCESS FROM NODE LR021247.0 TO NODE LR021247.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021167.0 TO NODE LR021167.0 IS CODE = 15.1
```

```
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 21167.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      979.67    Tc(MIN.) =  27.16
  AREA-AVERAGED Fm(INCH/HR) =  0.49    Ybar = 0.53
  TOTAL AREA(ACRES) =     741.39
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21167.00 = 13765.49 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021167.0 TO NODE LR021167.0 IS CODE = 14.0
------------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      979.67    Tc(MIN.) =  27.16
  AREA-AVERAGED Fm(INCH/HR) =  0.49    Ybar = 0.53
  TOTAL AREA(ACRES) =     741.39
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21167.00 = 13765.49 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021167.0 TO NODE LR021167.0 IS CODE =  12
------------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
==============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021167.0 TO NODE LR021247.0 IS CODE =  42
------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
==============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1320.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1290.00
  FLOW LENGTH(FEET) =  1357.45   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  90.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  90.0 INCH PIPE IS  64.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  29.05
  PIPE-FLOW(CFS) =    979.67
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.78    Tc(MIN.) =  27.94
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21247.00 = 15122.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021247.0 TO NODE LR021247.0 IS CODE =  81
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
  MAINLINE Tc(MIN) =  27.94
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.976
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B        0.01      0.75      0.25    56
  RESIDENTIAL
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  "3-4 DWELLINGS/ACRE"       B        7.68      0.75      0.60    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        2.53      0.63      1.00    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.71
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   10.22
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.43;30M= 0.89;1H= 1.17;3H= 1.89;6H= 2.56;24H= 5.08
  S-GRAPH: VALLEY(DEV.)= 92.2%;VALLEY(UNDEV.)/DESERT=  7.8%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.47; LAG(HR) = 0.37; Fm(INCH/HR) = 0.49; Ybar = 0.53
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    751.61
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21247.00 = 15122.94 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0302; Lca/L=0.4,n=.0271; Lca/L=0.5,n=.0249;Lca/L=0.6,n=.0232
  TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     162.28
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    970.66
  TOTAL AREA(ACRES) =    751.61       PEAK FLOW RATE(CFS) =     979.67
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021247.0 TO NODE LR021247.0 IS CODE =  11
------------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
==============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =      979.67    Tc(MIN.) =  27.94
  AREA-AVERAGED Fm(INCH/HR) =  0.49    Ybar = 0.53
  TOTAL AREA(ACRES) =     751.61
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21247.00 = 15122.94 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    725.89  20.98    2.347  0.74( 0.45) 0.60   424.5 LR021230.0
      2    729.79  23.11    2.214  0.74( 0.45) 0.61   459.6 LR021210.0
      3    729.09  23.12    2.213  0.74( 0.45) 0.61   459.3 LR021213.1
      4    724.99  24.48    2.139  0.74( 0.45) 0.61   477.5 LR021220.0
      5    716.58  25.41    2.091  0.74( 0.45) 0.61   485.7 LR021200.0
      6    661.35  29.54    1.911  0.74( 0.45) 0.61   503.8 LR021240.0
      7    633.36  31.47    1.840  0.74( 0.45) 0.61   507.4 LR021213.3
  LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21247.00 = 13319.44 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.43;30M= 0.89;1H= 1.17;3H= 1.90;6H= 2.58;24H= 5.11
  S-GRAPH: VALLEY(DEV.)= 93.7%;VALLEY(UNDEV.)/DESERT=  6.3%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.47; LAG(HR) = 0.37; Fm(INCH/HR) = 0.48; Ybar = 0.52
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.94; 30M = 0.94; 1HR = 0.94;
```

```
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1258.96
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21247.00 = 15122.94 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0302; Lca/L=0.4,n=.0271; Lca/L=0.5,n=.0249;Lca/L=0.6,n=.0232
  TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     280.84
  PEAK FLOW RATE(CFS) =    1608.40

****************************************************************************
  FLOW PROCESS FROM NODE LR021247.0 TO NODE LR021247.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021247.0 TO NODE LR021248.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1290.00  DOWNSTREAM(FEET) =   1280.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   452.82   CHANNEL SLOPE =  0.0221
  CHANNEL BASE(FEET) =    9.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   4.50
  CHANNEL FLOW THRU SUBAREA(CFS) =   1608.40
  FLOW VELOCITY(FEET/SEC.) =  26.30   FLOW DEPTH(FEET) =   3.72
  TRAVEL TIME(MIN.) =   0.29   Tc(MIN.) =  28.22
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21248.00 = 15575.76 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021248.0 TO NODE LR021248.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  28.22
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.964
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B       37.17      0.75      0.25    56
  COMMERCIAL                 B       10.19      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       34.08      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.38
  SUBAREA AREA(ACRES) =   81.44
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.44;30M= 0.89;1H= 1.18;3H= 1.91;6H= 2.59;24H= 5.14
  S-GRAPH: VALLEY(DEV.)= 94.1%;VALLEY(UNDEV.)/DESERT=  5.9%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.47; LAG(HR) = 0.38; Fm(INCH/HR) = 0.46; Ybar = 0.50
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.94; 30M = 0.94; 1HR = 0.94;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1340.40
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21248.00 = 15575.76 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0298; Lca/L=0.4,n=.0267; Lca/L=0.5,n=.0245;Lca/L=0.6,n=.0229
```



```
  TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     306.82
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1711.85
  TOTAL AREA(ACRES) =   1340.40       PEAK FLOW RATE(CFS) =    1711.85

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021248.0 TO NODE LR021248.0 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 21248.dna
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =   1340.40  TC(MIN.) =     28.22
  AREA-AVERAGED Fm(INCH/HR)=  0.46   Ybar =  0.50
  PEAK FLOW RATE(CFS)   =   1711.85
============================================================================
============================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
         (c) Copyright 1983-2002 Advanced Engineering Software (aes)
             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                           County of San Bernardino
                         Transportation Flood Control

                          Water Resources Division

 ------------------------------------------------------------------------
  FILE NAME: LR0213ZZ.Z13
  TIME/DATE OF STUDY: 09:24 09/29/2004
 ========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
 ========================================================================
                     --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.2500

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)     (n)
===  =====  ========  =================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
```



```
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


 ************************************************************************
  FLOW PROCESS FROM NODE LR021300.0 TO NODE LR021301.0 IS CODE =  21
 ------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
 ========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   702.11
  ELEVATION DATA: UPSTREAM(FEET) =   1665.00  DOWNSTREAM(FEET) =   1630.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.326
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.593
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        3.89      0.75       0.70    56   10.98
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.29      0.75       0.60    56   10.33
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA RUNOFF(CFS) =     14.40
  TOTAL AREA(ACRES) =      5.18   PEAK FLOW RATE(CFS) =     14.40

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

 ************************************************************************
  FLOW PROCESS FROM NODE LR021301.0 TO NODE LR021302.0 IS CODE =  63
 ------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
 ========================================================================
  UPSTREAM ELEVATION(FEET) = 1630.00  DOWNSTREAM ELEVATION(FEET) = 1627.00
  STREET LENGTH(FEET) =   166.02   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
```

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  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      17.48
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.44
    HALFSTREET FLOOD WIDTH(FEET) =   15.93
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.29
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.46
  STREET FLOW TRAVEL TIME(MIN.) =   0.84   Tc(MIN.) =  11.17
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.428
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.06      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.29      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    2.35      SUBAREA RUNOFF(CFS) =    6.16
  EFFECTIVE AREA(ACRES) =      7.53    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =      7.53        PEAK FLOW RATE(CFS) =      19.79

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.46   HALFSTREET FLOOD WIDTH(FEET) =  16.71
  FLOW VELOCITY(FEET/SEC.) =  3.40   DEPTH*VELOCITY(FT*FT/SEC.) =   1.57
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21302.00 =   868.13 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021302.0 TO NODE LR021303.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1627.00  DOWNSTREAM ELEVATION(FEET) = 1623.00
  STREET LENGTH(FEET) =   202.20   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      22.63
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
```



```
    STREET FLOW DEPTH(FEET) =  0.47
    HALFSTREET FLOOD WIDTH(FEET) =   17.34
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.62
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.71
  STREET FLOW TRAVEL TIME(MIN.) =   0.93   Tc(MIN.) =  12.10
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.267
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.93      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.36      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    2.29      SUBAREA RUNOFF(CFS) =    5.68
  EFFECTIVE AREA(ACRES) =      9.82    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =      9.82        PEAK FLOW RATE(CFS) =      24.38

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.48   HALFSTREET FLOOD WIDTH(FEET) =  17.80
  FLOW VELOCITY(FEET/SEC.) =  3.71   DEPTH*VELOCITY(FT*FT/SEC.) =   1.79
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21303.00 =  1070.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021303.0 TO NODE LR021304.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1623.00  DOWNSTREAM ELEVATION(FEET) = 1600.00
  STREET LENGTH(FEET) =   190.38   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.56

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      26.60
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.38
    HALFSTREET FLOOD WIDTH(FEET) =   12.88
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.48
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.87
  STREET FLOW TRAVEL TIME(MIN.) =   0.42   Tc(MIN.) =  12.52
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.200
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

```
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.38      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.45      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    1.83      SUBAREA RUNOFF(CFS) =    4.44
  EFFECTIVE AREA(ACRES) =     11.65    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     11.65        PEAK FLOW RATE(CFS) =      28.23

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.39   HALFSTREET FLOOD WIDTH(FEET) =  13.20
  FLOW VELOCITY(FEET/SEC.) =  7.59   DEPTH*VELOCITY(FT*FT/SEC.) =   2.96
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21304.00 =  1260.71 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021304.0 TO NODE LR021305.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1600.00  DOWNSTREAM ELEVATION(FEET) = 1580.00
  STREET LENGTH(FEET) =   267.45   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.63

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      33.35
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.44
    HALFSTREET FLOOD WIDTH(FEET) =   15.54
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.58
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.88
  STREET FLOW TRAVEL TIME(MIN.) =   0.68   Tc(MIN.) =  13.20
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.101
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.80      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        3.59      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    4.39      SUBAREA RUNOFF(CFS) =   10.24
```



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  EFFECTIVE AREA(ACRES) =     16.04    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     16.04        PEAK FLOW RATE(CFS) =      37.42

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.02; 6HR = 2.74; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.45   HALFSTREET FLOOD WIDTH(FEET) =  16.24
  FLOW VELOCITY(FEET/SEC.) =  6.79   DEPTH*VELOCITY(FT*FT/SEC.) =   3.06
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21305.00 =  1528.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021305.0 TO NODE LR021306.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1580.00  DOWNSTREAM ELEVATION(FEET) = 1555.00
  STREET LENGTH(FEET) =   439.49   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.67

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      49.85
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.51
    HALFSTREET FLOOD WIDTH(FEET) =   18.26
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.74
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.40
  STREET FLOW TRAVEL TIME(MIN.) =   1.09   Tc(MIN.) =  14.29
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.957
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        8.99      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.29      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   11.28      SUBAREA RUNOFF(CFS) =   24.86
  EFFECTIVE AREA(ACRES) =     27.32    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     27.32        PEAK FLOW RATE(CFS) =      60.20

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.01; 6HR = 2.71; 24HR = 5.50
```

```
  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.53   HALFSTREET FLOOD WIDTH(FEET) =  19.48
  FLOW VELOCITY(FEET/SEC.) =  7.24   DEPTH*VELOCITY(FT*FT/SEC.) =   3.83
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21306.00 =  1967.65 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021306.0 TO NODE LR021307.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1555.00  DOWNSTREAM ELEVATION(FEET) = 1530.00
  STREET LENGTH(FEET) =   430.58   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.67

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      75.99
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.56
    HALFSTREET FLOOD WIDTH(FEET) =   21.13
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.87
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.43
  STREET FLOW TRAVEL TIME(MIN.) =   0.91   Tc(MIN.) =  15.20
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.849
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.82      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       11.14      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA AREA(ACRES) =   14.96      SUBAREA RUNOFF(CFS) =   31.57
  EFFECTIVE AREA(ACRES) =     42.28    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     42.28        PEAK FLOW RATE(CFS) =      89.12

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.81; 6HR = 2.30; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.59   HALFSTREET FLOOD WIDTH(FEET) =  22.41
  FLOW VELOCITY(FEET/SEC.) =  8.27   DEPTH*VELOCITY(FT*FT/SEC.) =   4.87
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21307.00 =  2398.23 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021307.0 TO NODE LR021308.0 IS CODE =  63
```



```
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1530.00  DOWNSTREAM ELEVATION(FEET) = 1520.00
  STREET LENGTH(FEET) =   417.62   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.86

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      99.41
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.69
    HALFSTREET FLOOD WIDTH(FEET) =   27.60
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.23
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.31
  STREET FLOW TRAVEL TIME(MIN.) =   1.12   Tc(MIN.) =  16.32
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.731
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.69      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.54      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.66
  SUBAREA AREA(ACRES) =   10.23      SUBAREA RUNOFF(CFS) =   20.57
  EFFECTIVE AREA(ACRES) =     52.51    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     52.51        PEAK FLOW RATE(CFS) =     105.17

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.70   HALFSTREET FLOOD WIDTH(FEET) =  28.21
  FLOW VELOCITY(FEET/SEC.) =  6.32   DEPTH*VELOCITY(FT*FT/SEC.) =   4.45
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21308.00 =  2815.85 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021308.0 TO NODE LR021309.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1520.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1445.00
  FLOW LENGTH(FEET) =  2140.63   MANNING'S N =  0.013
```

```
  USER SPECIFIED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  25.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.80
  PIPE-FLOW(CFS) =    105.17
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.80    Tc(MIN.) =  18.12
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21309.00 =  4956.48 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021309.0 TO NODE LR021309.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  18.12
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.564
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       52.35      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   52.35      SUBAREA RUNOFF(CFS) =   99.67
  EFFECTIVE AREA(ACRES) =    104.86   AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.64
  TOTAL AREA(ACRES) =    104.86       PEAK FLOW RATE(CFS) =     196.97

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.95; 6HR = 2.59; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021309.0 TO NODE LR021310.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1445.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1415.00
  FLOW LENGTH(FEET) =   762.02   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  31.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  24.25
  PIPE-FLOW(CFS) =    196.97
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.52    Tc(MIN.) =  18.64
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21310.00 =  5718.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021310.0 TO NODE LR021310.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  18.64
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.521
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```



```
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       18.20      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   18.20      SUBAREA RUNOFF(CFS) =   33.94
  EFFECTIVE AREA(ACRES) =    123.06   AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.63
  TOTAL AREA(ACRES) =    123.06       PEAK FLOW RATE(CFS) =     226.81

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.02; 6HR = 2.73; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021310.0 TO NODE LR021311.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1415.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1356.00
  FLOW LENGTH(FEET) =  1371.34   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  33.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  25.72
  PIPE-FLOW(CFS) =    226.81
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.89    Tc(MIN.) =  19.53
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21311.00 =  7089.84 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021311.0 TO NODE LR021311.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  19.53
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.451
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       19.39      0.75      0.60    56
  SCHOOL                     B       10.62      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   30.01      SUBAREA RUNOFF(CFS) =   54.08
  EFFECTIVE AREA(ACRES) =    153.07   AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.63
  TOTAL AREA(ACRES) =    153.07       PEAK FLOW RATE(CFS) =     273.20

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.00; 6HR = 2.69; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021311.0 TO NODE LR021312.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1356.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1310.00
  FLOW LENGTH(FEET) =  1393.37   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  51.0 INCH PIPE IS  37.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  24.44
  PIPE-FLOW(CFS) =    273.20
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.95    Tc(MIN.) =  20.48
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21312.00 =  8483.21 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021312.0 TO NODE LR021312.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  20.48
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.382
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       77.43      0.75      0.60    56
  SCHOOL                     B        5.45      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   82.88      SUBAREA RUNOFF(CFS) =  144.23
  EFFECTIVE AREA(ACRES) =    235.95   AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =    235.95       PEAK FLOW RATE(CFS) =     407.94

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.01; 6HR = 2.70; 24HR = 5.48

****************************************************************************
  FLOW PROCESS FROM NODE LR021312.0 TO NODE LR021313.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1310.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1285.00
  FLOW LENGTH(FEET) =   759.92   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  43.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  27.07
  PIPE-FLOW(CFS) =    407.94
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.47    Tc(MIN.) =  20.95
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21313.00 =  9243.13 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021313.0 TO NODE LR021313.0 IS CODE =  81
----------------------------------------------------------------------------
```



```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  20.95
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.350
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       10.40      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   10.40      SUBAREA RUNOFF(CFS) =   17.80
  EFFECTIVE AREA(ACRES) =    246.35   AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =    246.35       PEAK FLOW RATE(CFS) =     418.92

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.86; 6HR = 2.40; 24HR = 4.78

****************************************************************************
  FLOW PROCESS FROM NODE LR021313.0 TO NODE LR021360.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1285.00  DOWNSTREAM(FEET) =  1255.00
  FLOW LENGTH(FEET) =  1079.23   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   6.00   GIVEN BOX HEIGHT(FEET) =   5.00
  FLOWDEPTH IN BOX IS  3.01 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  23.21
  BOX-FLOW(CFS) =    418.92
  BOX-FLOW TRAVEL TIME(MIN.) =   0.78    Tc(MIN.) =  21.72
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21360.00 = 10322.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021360.0 TO NODE LR021360.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.72
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.300
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.55      0.75      0.60    56
  MOBILE HOME PARK           B        1.01      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.54
  SUBAREA AREA(ACRES) =    5.56      SUBAREA RUNOFF(CFS) =    9.50
  EFFECTIVE AREA(ACRES) =    251.91   AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.61
  TOTAL AREA(ACRES) =    251.91       PEAK FLOW RATE(CFS) =     418.92
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.80; 6HR = 2.27; 24HR = 4.75

****************************************************************************
```

```
  FLOW PROCESS FROM NODE LR021360.0 TO NODE LR021360.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021320.0 TO NODE LR021321.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   911.31
  ELEVATION DATA: UPSTREAM(FEET) =   1510.00  DOWNSTREAM(FEET) =   1450.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.841
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.489
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        7.00      0.75      0.60    56   10.84
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     19.16
  TOTAL AREA(ACRES) =      7.00   PEAK FLOW RATE(CFS) =     19.16

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021321.0 TO NODE LR021322.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1450.00  DOWNSTREAM(FEET) =   1420.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   725.48   CHANNEL SLOPE =  0.0414
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     19.16
  FLOW VELOCITY(FEET/SEC.) =   2.31   FLOW DEPTH(FEET) =   0.41
  TRAVEL TIME(MIN.) =   5.23   Tc(MIN.) =  16.07
  LONGEST FLOWPATH FROM NODE  21320.00 TO NODE  21322.00 =  1636.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021322.0 TO NODE LR021322.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  16.07
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.755
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        9.15      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
```



```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    9.15      SUBAREA RUNOFF(CFS) =   18.99
  EFFECTIVE AREA(ACRES) =     16.15   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     16.15       PEAK FLOW RATE(CFS) =      33.52

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 3.27

****************************************************************************
  FLOW PROCESS FROM NODE LR021322.0 TO NODE LR021332.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1420.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1355.00
  FLOW LENGTH(FEET) =  1402.23   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  11.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.57
  PIPE-FLOW(CFS) =     33.52
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.41    Tc(MIN.) =  17.49
  LONGEST FLOWPATH FROM NODE  21320.00 TO NODE  21332.00 =  3039.02 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021332.0 TO NODE LR021332.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.49
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.619
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        9.34      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    9.34      SUBAREA RUNOFF(CFS) =   18.25
  EFFECTIVE AREA(ACRES) =     25.49   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     25.49       PEAK FLOW RATE(CFS) =      49.80

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021332.0 TO NODE LR021332.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  17.49
  RAINFALL INTENSITY(INCH/HR) =   2.62
```

```
  AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.60
  EFFECTIVE STREAM AREA(ACRES) =    25.49
  TOTAL STREAM AREA(ACRES) =    25.49
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     49.80

****************************************************************************
  FLOW PROCESS FROM NODE LR021330.0 TO NODE LR021331.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   870.87
  ELEVATION DATA: UPSTREAM(FEET) =   1440.00  DOWNSTREAM(FEET) =   1425.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.920
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.003
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        9.67      0.75      0.60    56   13.92
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     22.23
  TOTAL AREA(ACRES) =      9.67   PEAK FLOW RATE(CFS) =     22.23

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 3.27

****************************************************************************
  FLOW PROCESS FROM NODE LR021331.0 TO NODE LR021332.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1425.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1355.00
  FLOW LENGTH(FEET) =  1286.35   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  36.0 INCH PIPE IS   9.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.61
  PIPE-FLOW(CFS) =     22.23
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.46    Tc(MIN.) =  15.38
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.829
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       22.89      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   22.89      SUBAREA RUNOFF(CFS) =   49.04
  EFFECTIVE AREA(ACRES) =     32.56    AREA-AVERAGED Fm(INCH/HR) =  0.45
```



```
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     32.56        PEAK FLOW RATE(CFS) =     69.76

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 5.50

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  6.0       STREET HALFWIDTH(FEET) = 18.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.66
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   47.53
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.50
    HALFSTREET FLOOD WIDTH(FEET) =   18.14
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.50
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.27
  LONGEST FLOWPATH FROM NODE  21330.00 TO NODE  21332.00 =  2157.22 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021332.0 TO NODE LR021332.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.38
  RAINFALL INTENSITY(INCH/HR) =   2.83
  AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.60
  EFFECTIVE STREAM AREA(ACRES) =    32.56
  TOTAL STREAM AREA(ACRES) =    32.56
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     69.76

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     49.80  17.49    2.619  0.75( 0.45) 0.60    25.5 LR021320.0
      2     69.76  15.38    2.829  0.75( 0.45) 0.60    32.6 LR021330.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    117.79  15.38    2.829  0.75( 0.45) 0.60    55.0 LR021330.0
      2    113.40  17.49    2.619  0.75( 0.45) 0.60    58.0 LR021320.0
```

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    117.79    Tc(MIN.) =    15.38
  EFFECTIVE AREA(ACRES) =    54.97   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     58.05
  LONGEST FLOWPATH FROM NODE  21320.00 TO NODE  21332.00 =  3039.02 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021332.0 TO NODE LR021355.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1355.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1325.00
  FLOW LENGTH(FEET) =   766.86   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  26.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  21.10
  PIPE-FLOW(CFS) =    117.79
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.61    Tc(MIN.) =  15.98
  LONGEST FLOWPATH FROM NODE  21320.00 TO NODE  21355.00 =  3805.88 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021355.0 TO NODE LR021355.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  15.98
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.765
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       14.76      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   14.76      SUBAREA RUNOFF(CFS) =   30.76
  EFFECTIVE AREA(ACRES) =     69.73   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     72.81       PEAK FLOW RATE(CFS) =     145.34

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 5.36

****************************************************************************
  FLOW PROCESS FROM NODE LR021355.0 TO NODE LR021355.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021340.0 TO NODE LR021341.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
```



```
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   528.12
  ELEVATION DATA: UPSTREAM(FEET) =   1610.00  DOWNSTREAM(FEET) =   1530.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.378
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.396
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.56      0.75      0.60    56    7.38
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        3.79      0.75      0.70    56    7.84
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA RUNOFF(CFS) =     15.20
  TOTAL AREA(ACRES) =      4.35   PEAK FLOW RATE(CFS) =     15.20

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021341.0 TO NODE LR021342.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1530.00  DOWNSTREAM ELEVATION(FEET) = 1490.00
  STREET LENGTH(FEET) =   644.80   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.66

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      39.30
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.47
    HALFSTREET FLOOD WIDTH(FEET) =   17.18
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.40
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.01
  STREET FLOW TRAVEL TIME(MIN.) =   1.68   Tc(MIN.) =   9.06
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.887
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       10.28      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.38      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
```

```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
  SUBAREA AREA(ACRES) =   15.66      SUBAREA RUNOFF(CFS) =   48.10
  EFFECTIVE AREA(ACRES) =     20.01    AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.65
  TOTAL AREA(ACRES) =     20.01        PEAK FLOW RATE(CFS) =      61.30

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.53   HALFSTREET FLOOD WIDTH(FEET) =  19.36
  FLOW VELOCITY(FEET/SEC.) =  7.45   DEPTH*VELOCITY(FT*FT/SEC.) =   3.93
  LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21342.00 =  1172.92 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021342.0 TO NODE LR021343.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1490.00  DOWNSTREAM ELEVATION(FEET) = 1425.00
  STREET LENGTH(FEET) =  1308.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     120.53
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.66
    HALFSTREET FLOOD WIDTH(FEET) =   25.83
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.57
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.62
  STREET FLOW TRAVEL TIME(MIN.) =   2.55   Tc(MIN.) =  11.60
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.350
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       12.19      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       33.88      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA AREA(ACRES) =   46.07      SUBAREA RUNOFF(CFS) =  118.03
  EFFECTIVE AREA(ACRES) =     66.08    AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.67
  TOTAL AREA(ACRES) =     66.08        PEAK FLOW RATE(CFS) =     169.67

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
```



```
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.73   HALFSTREET FLOOD WIDTH(FEET) =  29.49
  FLOW VELOCITY(FEET/SEC.) =  9.36   DEPTH*VELOCITY(FT*FT/SEC.) =   6.83

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.70
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.78
  PIPE-FLOW(CFS) =     46.49
  PIPEFLOW TRAVEL TIME(MIN.) =   1.47    Tc(MIN.) =  10.53
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.551
  SUBAREA AREA(ACRES) =   46.07      SUBAREA RUNOFF(CFS) =  126.34
  TOTAL AREA(ACRES) =     66.08        PEAK FLOW RATE(CFS) =    181.58

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 5.50
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  135.10
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.68
    HALFSTREET FLOOD WIDTH(FEET) =   26.99
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.83
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.00
  LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21343.00 =  2480.92 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021343.0 TO NODE LR021354.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1425.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1380.00
  FLOW LENGTH(FEET) =  1461.18   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  32.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  21.59
  PIPE-FLOW(CFS) =    181.58
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.13    Tc(MIN.) =  11.66
  LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21354.00 =  3942.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021354.0 TO NODE LR021354.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  11.66
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.341
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

```
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       23.13      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   23.13      SUBAREA RUNOFF(CFS) =   60.20
  EFFECTIVE AREA(ACRES) =     89.21   AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.65
  TOTAL AREA(ACRES) =     89.21       PEAK FLOW RATE(CFS) =     229.27

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 5.47

****************************************************************************
  FLOW PROCESS FROM NODE LR021354.0 TO NODE LR021354.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.66
  RAINFALL INTENSITY(INCH/HR) =   3.34
  AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.65
  EFFECTIVE STREAM AREA(ACRES) =    89.21
  TOTAL STREAM AREA(ACRES) =    89.21
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    229.27

****************************************************************************
  FLOW PROCESS FROM NODE LR021350.0 TO NODE LR021351.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   820.03
  ELEVATION DATA: UPSTREAM(FEET) =   1555.00  DOWNSTREAM(FEET) =   1510.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.778
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.502
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.46      0.75      0.70    56   11.46
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.41      0.75      0.60    56   10.78
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA RUNOFF(CFS) =     13.08
  TOTAL AREA(ACRES) =      4.87   PEAK FLOW RATE(CFS) =     13.08

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021351.0 TO NODE LR021352.0 IS CODE =  54
```



```
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1510.00  DOWNSTREAM(FEET) =   1480.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   236.29   CHANNEL SLOPE =  0.1270
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     13.08
  FLOW VELOCITY(FEET/SEC.) =   3.22   FLOW DEPTH(FEET) =   0.29
  TRAVEL TIME(MIN.) =   1.22   Tc(MIN.) =  12.00
  LONGEST FLOWPATH FROM NODE  21350.00 TO NODE  21352.00 =  1056.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021352.0 TO NODE LR021352.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  12.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.283
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.96      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.22      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =     2.18      SUBAREA RUNOFF(CFS) =     5.43
  EFFECTIVE AREA(ACRES) =      7.05   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =      7.05       PEAK FLOW RATE(CFS) =      17.55

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021352.0 TO NODE LR021352.5 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1480.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1460.00
  FLOW LENGTH(FEET) =   207.56   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  45.0 INCH PIPE IS   6.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.36
  PIPE-FLOW(CFS) =     17.55
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =  12.20
  LONGEST FLOWPATH FROM NODE  21350.00 TO NODE  21352.50 =  1263.88 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021352.5 TO NODE LR021352.5 IS CODE =  81
----------------------------------------------------------------------------
```

```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN) =  12.20
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.251
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.89      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.98      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    7.87      SUBAREA RUNOFF(CFS) =   19.37
  EFFECTIVE AREA(ACRES) =     14.92   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     14.92       PEAK FLOW RATE(CFS) =      36.72

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 3.27

********************************************************************************
  FLOW PROCESS FROM NODE LR021352.5 TO NODE LR021353.0 IS CODE =  42
--------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
================================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1460.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1450.00
  FLOW LENGTH(FEET) =   277.00   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  12.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.24
  PIPE-FLOW(CFS) =     36.72
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.30    Tc(MIN.) =  12.50
  LONGEST FLOWPATH FROM NODE  21350.00 TO NODE  21353.00 =  1540.88 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE LR021353.0 TO NODE LR021353.0 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN) =  12.50
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.203
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.59      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        7.66      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    9.25      SUBAREA RUNOFF(CFS) =   22.41
  EFFECTIVE AREA(ACRES) =     24.17   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
```



```
  TOTAL AREA(ACRES) =     24.17       PEAK FLOW RATE(CFS) =      58.49

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 3.27

********************************************************************************
  FLOW PROCESS FROM NODE LR021353.0 TO NODE LR021354.0 IS CODE =  42
--------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
================================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1450.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1380.00
  FLOW LENGTH(FEET) =  2039.85   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  15.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.06
  PIPE-FLOW(CFS) =     58.49
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.99    Tc(MIN.) =  14.50
  LONGEST FLOWPATH FROM NODE  21350.00 TO NODE  21354.00 =  3580.73 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE LR021354.0 TO NODE LR021354.0 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN) =  14.50
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.931
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       33.72      0.75      0.60    56
  COMMERCIAL                 B        0.32      0.75      0.10    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.48      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   35.52      SUBAREA RUNOFF(CFS) =   79.36
  EFFECTIVE AREA(ACRES) =     59.69   AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.64
  TOTAL AREA(ACRES) =     59.69       PEAK FLOW RATE(CFS) =     131.94

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 5.28

********************************************************************************
  FLOW PROCESS FROM NODE LR021354.0 TO NODE LR021354.0 IS CODE =   1
--------------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  14.50
  RAINFALL INTENSITY(INCH/HR) =   2.93
```

```
  AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.64
  EFFECTIVE STREAM AREA(ACRES) =    59.69
  TOTAL STREAM AREA(ACRES) =    59.69
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    131.94

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    229.27  11.66    3.341  0.75( 0.48) 0.65    89.2 LR021340.0
      2    131.94  14.50    2.931  0.75( 0.48) 0.64    59.7 LR021350.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    353.07  11.66    3.341  0.75( 0.48) 0.64   137.2 LR021340.0
      2    328.35  14.50    2.931  0.75( 0.48) 0.64   148.9 LR021350.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    353.07    Tc(MIN.) =    11.66
  EFFECTIVE AREA(ACRES) =   137.21   AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.64
  TOTAL AREA(ACRES) =    148.90
  LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21354.00 =  3942.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021354.0 TO NODE LR021355.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1380.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1325.00
  FLOW LENGTH(FEET) =  1308.82   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  39.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  28.58
  PIPE-FLOW(CFS) =    353.07
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.76    Tc(MIN.) =  12.42
  LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21355.00 =  5250.92 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021355.0 TO NODE LR021355.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  12.42
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.216
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
```



```
  "3-4 DWELLINGS/ACRE"       B        6.86      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    6.86      SUBAREA RUNOFF(CFS) =   17.08
  EFFECTIVE AREA(ACRES) =    144.07   AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.64
  TOTAL AREA(ACRES) =    155.76       PEAK FLOW RATE(CFS) =     354.75

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.91

****************************************************************************
  FLOW PROCESS FROM NODE LR021355.0 TO NODE LR021355.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    353.61  12.48    3.207  0.75( 0.48) 0.64   144.1 LR021340.0
      2    330.23  15.32    2.835  0.75( 0.48) 0.64   155.8 LR021350.0
  LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21355.00 =  5250.92 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    145.04  16.03    2.760  0.75( 0.45) 0.60    69.7 LR021330.0
      2    138.50  18.14    2.562  0.75( 0.45) 0.60    72.8 LR021320.0
  LONGEST FLOWPATH FROM NODE  21320.00 TO NODE  21355.00 =  3805.88 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    488.39  12.48    3.207  0.75( 0.47) 0.63   198.4 LR021340.0
      2    473.42  15.32    2.835  0.75( 0.47) 0.63   222.4 LR021350.0
      3    464.70  16.03    2.760  0.75( 0.47) 0.63   225.5 LR021330.0
      4    430.47  18.14    2.562  0.75( 0.47) 0.63   228.6 LR021320.0
    TOTAL AREA(ACRES) =    228.57

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      488.39  Tc(MIN.) =   12.479
  EFFECTIVE AREA(ACRES) =    198.37  AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.63
  TOTAL AREA(ACRES) =    228.57
  LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21355.00 =  5250.92 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021355.0 TO NODE LR021355.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021355.0 TO NODE LR021356.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
```

```
==========================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1325.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1315.00
  FLOW LENGTH(FEET) =   763.37   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  75.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  75.0 INCH PIPE IS  55.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.95
  PIPE-FLOW(CFS) =    488.39
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.64    Tc(MIN.) =  13.12
  LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21356.00 =  6014.29 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021356.0 TO NODE LR021356.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN) =  13.12
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.112
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.42      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    4.42      SUBAREA RUNOFF(CFS) =   10.60
  EFFECTIVE AREA(ACRES) =    202.79   AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.63
  TOTAL AREA(ACRES) =    232.99       PEAK FLOW RATE(CFS) =     488.39
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.87

****************************************************************************
  FLOW PROCESS FROM NODE LR021356.0 TO NODE LR021357.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1315.00  DOWNSTREAM(FEET) =   1296.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   552.93   CHANNEL SLOPE =  0.0344
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   4.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    488.39
  FLOW VELOCITY(FEET/SEC.) =  12.13   FLOW DEPTH(FEET) =   2.91
  TRAVEL TIME(MIN.) =   0.76   Tc(MIN.) =  13.88
  LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21357.00 =  6567.22 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021357.0 TO NODE LR021357.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN) =  13.88
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.009
```



```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       38.32      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   38.32      SUBAREA RUNOFF(CFS) =   88.30
  EFFECTIVE AREA(ACRES) =    241.11   AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =    271.31       PEAK FLOW RATE(CFS) =     551.55

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021357.0 TO NODE LR021358.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1296.00  DOWNSTREAM(FEET) =   1285.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   511.89   CHANNEL SLOPE =  0.0215
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   4.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    551.55
  FLOW VELOCITY(FEET/SEC.) =  10.58   FLOW DEPTH(FEET) =   3.48
  TRAVEL TIME(MIN.) =   0.81   Tc(MIN.) =  14.68
  LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21358.00 =  7079.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021358.0 TO NODE LR021358.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN) =  14.68
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.909
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        7.40      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    7.40      SUBAREA RUNOFF(CFS) =   16.38
  EFFECTIVE AREA(ACRES) =    248.51   AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =    278.71       PEAK FLOW RATE(CFS) =     551.55
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021358.0 TO NODE LR021359.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
```

```
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1285.00  DOWNSTREAM(FEET) =   1267.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   575.39   CHANNEL SLOPE =  0.0313
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   4.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    551.55
  FLOW VELOCITY(FEET/SEC.) =  12.13   FLOW DEPTH(FEET) =   3.17
  TRAVEL TIME(MIN.) =   0.79   Tc(MIN.) =  15.47
  LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21359.00 =  7654.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021359.0 TO NODE LR021359.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN) =  15.47
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.819
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.95      0.75      0.60    56
  COMMERCIAL                 B        2.16      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.45
  SUBAREA AREA(ACRES) =    7.11      SUBAREA RUNOFF(CFS) =   15.89
  EFFECTIVE AREA(ACRES) =    255.62   AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =    285.82       PEAK FLOW RATE(CFS) =     551.55
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021359.0 TO NODE LR021360.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
==========================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1267.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1255.00
  FLOW LENGTH(FEET) =   711.66   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  78.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  78.0 INCH PIPE IS  53.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  22.85
  PIPE-FLOW(CFS) =    551.55
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.52    Tc(MIN.) =  15.99
  LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21360.00 =  8366.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021360.0 TO NODE LR021360.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN) =  15.99
```



```
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.763
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.67      0.75      0.60    56
  MOBILE HOME PARK           B        0.92      0.75      0.25    56
  COMMERCIAL                 B        0.01      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.53
  SUBAREA AREA(ACRES) =    4.60      SUBAREA RUNOFF(CFS) =    9.80
  EFFECTIVE AREA(ACRES) =    260.22   AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =    290.42       PEAK FLOW RATE(CFS) =     551.55
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021360.0 TO NODE LR021360.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    550.16  16.08    2.754  0.75( 0.46) 0.62   260.2 LR021340.0
      2    529.39  18.95    2.496  0.75( 0.46) 0.62   284.3 LR021350.0
      3    519.64  19.67    2.441  0.75( 0.46) 0.62   287.3 LR021330.0
      4    482.97  21.85    2.292  0.75( 0.46) 0.62   290.4 LR021320.0
  LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21360.00 =  8366.16 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    418.92  21.72    2.300  0.75( 0.46) 0.61   251.9 LR021300.0
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21360.00 = 10322.36 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    936.92  16.08    2.754  0.75( 0.46) 0.62   446.7 LR021340.0
      2    933.86  18.95    2.496  0.75( 0.46) 0.62   504.1 LR021350.0
      3    928.08  19.67    2.441  0.75( 0.46) 0.62   515.5 LR021330.0
      4    903.97  21.72    2.300  0.75( 0.46) 0.62   542.2 LR021300.0
      5    900.12  21.85    2.292  0.75( 0.46) 0.62   542.3 LR021320.0
    TOTAL AREA(ACRES) =    542.33

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      936.92  Tc(MIN.) =   16.082
  EFFECTIVE AREA(ACRES) =    446.71  AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =    542.33
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21360.00 = 10322.36 FEET.

****************************************************************************
```

```
 FLOW PROCESS FROM NODE LR021360.0 TO NODE LR021360.0 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE LR021360.0 TO NODE LR021361.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1255.00  DOWNSTREAM(FEET) =   1240.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   770.40   CHANNEL SLOPE =  0.0195
 CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   6.00
 CHANNEL FLOW THRU SUBAREA(CFS) =    936.92
 FLOW VELOCITY(FEET/SEC.) =  11.49   FLOW DEPTH(FEET) =   4.05
 TRAVEL TIME(MIN.) =   1.12   Tc(MIN.) =  17.20
 LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21361.00 = 11092.76 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021361.0 TO NODE LR021361.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  17.20
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.645
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       11.84      0.75      0.60    56
 MOBILE HOME PARK           B        3.43      0.75      0.25    56
 COMMERCIAL                 B        1.54      0.75      0.10    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.48
 SUBAREA AREA(ACRES) =   16.81      SUBAREA RUNOFF(CFS) =   34.56
 EFFECTIVE AREA(ACRES) =    463.52   AREA-AVERAGED Fm(INCH/HR) =  0.46
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.61
 TOTAL AREA(ACRES) =    559.14       PEAK FLOW RATE(CFS) =     936.92
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.98; 6HR = 2.66; 24HR = 4.84

****************************************************************************
 FLOW PROCESS FROM NODE LR021361.0 TO NODE LR021361.0 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE LR021248.0 TO NODE LR021248.0 IS CODE = 15.1
----------------------------------------------------------------------------
 >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
 PEAK FLOWRATE TABLE FILE NAME: 21248.DNA
 MEMORY BANK #  2 DEFINED AS FOLLOWS:
```



```
 PEAK FLOW RATE(CFS) =     1711.85    Tc(MIN.) =  28.22
 AREA-AVERAGED Fm(INCH/HR) =  0.46    Ybar = 0.50
 TOTAL AREA(ACRES) =    1340.40
 LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21248.00 = 15575.76 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021248.0 TO NODE LR021248.0 IS CODE = 14.0
----------------------------------------------------------------------------
 >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

 MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     1711.85    Tc(MIN.) =  28.22
 AREA-AVERAGED Fm(INCH/HR) =  0.46    Ybar = 0.50
 TOTAL AREA(ACRES) =    1340.40
 LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21248.00 = 15575.76 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021248.0 TO NODE LR021248.0 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE LR021248.0 TO NODE LR021361.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1280.00  DOWNSTREAM(FEET) =   1240.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1507.42   CHANNEL SLOPE =  0.0265
 CHANNEL BASE(FEET) =    9.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   5.00
 CHANNEL FLOW THRU SUBAREA(CFS) =   1711.85
 FLOW VELOCITY(FEET/SEC.) =  28.58   FLOW DEPTH(FEET) =   3.67
 TRAVEL TIME(MIN.) =   0.88   Tc(MIN.) =  29.10
 LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21361.00 = 17083.18 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021361.0 TO NODE LR021361.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  29.10
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.929
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       42.57      0.75      0.60    56
 MOBILE HOME PARK           B       41.35      0.75      0.25    56
 COMMERCIAL                 B       17.40      0.75      0.10    56
 AGRICULTURAL FAIR COVER
 "ORCHARDS"                 B        0.33      0.63      1.00    65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.37
 SUBAREA AREA(ACRES) =  101.65
 UNIT-HYDROGRAPH DATA:
```

```
  RAINFALL(INCH): 5M= 0.44;30M= 0.90;1H= 1.18;3H= 1.92;6H= 2.60;24H= 5.14
  S-GRAPH: VALLEY(DEV.)= 94.5%;VALLEY(UNDEV.)/DESERT=  5.5%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.49; LAG(HR) = 0.39; Fm(INCH/HR) = 0.45; Ybar = 0.49
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.94; 30M = 0.94; 1HR = 0.94;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1442.05
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21361.00 = 17083.18 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0285; Lca/L=0.4,n=.0255; Lca/L=0.5,n=.0235;Lca/L=0.6,n=.0219
  TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     337.52
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1802.97
  TOTAL AREA(ACRES) =   1442.05       PEAK FLOW RATE(CFS) =    1802.97

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.17

****************************************************************************
  FLOW PROCESS FROM NODE LR021361.0 TO NODE LR021361.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     1802.97    Tc(MIN.) =  29.10
  AREA-AVERAGED Fm(INCH/HR) =  0.45    Ybar = 0.49
  TOTAL AREA(ACRES) =    1442.05
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21361.00 = 17083.18 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    936.92  17.20    2.645  0.75( 0.46) 0.61   463.5 LR021340.0
      2    933.86  20.07    2.411  0.75( 0.46) 0.61   520.9 LR021350.0
      3    928.08  20.79    2.361  0.75( 0.46) 0.61   532.3 LR021330.0
      4    903.97  22.85    2.231  0.75( 0.46) 0.61   559.0 LR021300.0
      5    900.12  22.98    2.224  0.75( 0.46) 0.61   559.1 LR021320.0
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21361.00 = 11092.76 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.44;30M= 0.91;1H= 1.20;3H= 1.90;6H= 2.54;24H= 5.16
  S-GRAPH: VALLEY(DEV.)= 96.0%;VALLEY(UNDEV.)/DESERT=  4.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.49; LAG(HR) = 0.39; Fm(INCH/HR) = 0.45; Ybar = 0.49
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.91; 30M = 0.91; 1HR = 0.91;
  3HR = 0.99; 6HR = 0.99; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   2001.19
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21361.00 = 17083.18 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0285; Lca/L=0.4,n=.0255; Lca/L=0.5,n=.0235;Lca/L=0.6,n=.0219
  TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     467.29
  PEAK FLOW RATE(CFS) =    2451.79

****************************************************************************
  FLOW PROCESS FROM NODE LR021361.0 TO NODE LR021361.0 IS CODE =  12
```



```
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021361.0 TO NODE LR021378.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1240.00  DOWNSTREAM(FEET) =   1235.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   988.61   CHANNEL SLOPE =  0.0051
  CHANNEL BASE(FEET) =   13.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   6.50
  CHANNEL FLOW THRU SUBAREA(CFS) =   2451.79
  FLOW VELOCITY(FEET/SEC.) =  16.85   FLOW DEPTH(FEET) =   5.88
  TRAVEL TIME(MIN.) =   0.98   Tc(MIN.) =  30.08
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21378.00 = 18071.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021378.0 TO NODE LR021378.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  30.08
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.892
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.75      0.75      0.60    56
  COMMERCIAL                 B       11.57      0.75      0.10    56
  MOBILE HOME PARK           B       12.66      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.25
  SUBAREA AREA(ACRES) =   28.98
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.44;30M= 0.91;1H= 1.20;3H= 1.90;6H= 2.54;24H= 5.15
  S-GRAPH: VALLEY(DEV.)= 96.1%;VALLEY(UNDEV.)/DESERT=  3.9%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.50; LAG(HR) = 0.40; Fm(INCH/HR) = 0.45; Ybar = 0.49
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.91; 30M = 0.91; 1HR = 0.91;
  3HR = 0.99; 6HR = 0.99; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   2030.17
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21378.00 = 18071.79 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0280; Lca/L=0.4,n=.0251; Lca/L=0.5,n=.0230;Lca/L=0.6,n=.0215
  TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     476.33
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   2413.75
  TOTAL AREA(ACRES) =   2030.17       PEAK FLOW RATE(CFS) =    2451.79
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.85; 6HR = 2.36; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021378.0 TO NODE LR021378.0 IS CODE =   1
```

```
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =    2451.79    Tc(MIN.) =  30.08
  AREA-AVERAGED Fm(INCH/HR) =  0.45   Ybar = 0.49
  TOTAL AREA(ACRES) =    2030.17

****************************************************************************
  FLOW PROCESS FROM NODE LR021370.0 TO NODE LR021371.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   627.80
  ELEVATION DATA: UPSTREAM(FEET) =   1415.00  DOWNSTREAM(FEET) =   1390.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.620
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.311
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.63      0.75      0.60    56   10.33
  COMMERCIAL                 B        3.67      0.75      0.10    56    7.62
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.35
  SUBAREA RUNOFF(CFS) =     26.61
  TOTAL AREA(ACRES) =      7.30   PEAK FLOW RATE(CFS) =     26.61

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021371.0 TO NODE LR021372.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1390.00  DOWNSTREAM ELEVATION(FEET) = 1380.00
  STREET LENGTH(FEET) =   602.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      35.25
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
```



```
    STREET FLOW DEPTH(FEET) =  0.54
    HALFSTREET FLOOD WIDTH(FEET) =   20.09
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.00
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.17
  STREET FLOW TRAVEL TIME(MIN.) =   2.51   Tc(MIN.) =  10.13
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.635
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.99      0.75      0.60    56
  COMMERCIAL                 B        0.01      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =     6.00      SUBAREA RUNOFF(CFS) =   17.21
  EFFECTIVE AREA(ACRES) =     13.30    AREA-AVERAGED Fm(INCH/HR) =  0.35
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.46
  TOTAL AREA(ACRES) =     13.30        PEAK FLOW RATE(CFS) =      39.38

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.56   HALFSTREET FLOOD WIDTH(FEET) =  20.88
  FLOW VELOCITY(FEET/SEC.) =  4.17   DEPTH*VELOCITY(FT*FT/SEC.) =   2.32
  LONGEST FLOWPATH FROM NODE  21370.00 TO NODE  21372.00 =  1230.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021372.0 TO NODE LR021373.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1380.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1365.00
  FLOW LENGTH(FEET) =   527.76   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  14.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.50
  PIPE-FLOW(CFS) =     39.38
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.64    Tc(MIN.) =  10.77
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.503
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.16      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =     5.16      SUBAREA RUNOFF(CFS) =   14.18
  EFFECTIVE AREA(ACRES) =     18.46    AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =     18.46        PEAK FLOW RATE(CFS) =     51.98

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75
```

```
  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  6.0       STREET HALFWIDTH(FEET) = 18.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   12.60
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.38
    HALFSTREET FLOOD WIDTH(FEET) =   12.73
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.63
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.38
  LONGEST FLOWPATH FROM NODE  21370.00 TO NODE  21373.00 =  1758.06 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021373.0 TO NODE LR021374.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1365.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1345.00
  FLOW LENGTH(FEET) =   326.48   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  13.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.69
  PIPE-FLOW(CFS) =     51.98
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =  11.05
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.450
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.94      0.75      0.60    56
  COMMERCIAL                 B        0.17      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.58
  SUBAREA AREA(ACRES) =    5.11      SUBAREA RUNOFF(CFS) =   13.86
  EFFECTIVE AREA(ACRES) =     23.57    AREA-AVERAGED Fm(INCH/HR) =  0.39
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.52
  TOTAL AREA(ACRES) =     23.57        PEAK FLOW RATE(CFS) =     64.95

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  6.0       STREET HALFWIDTH(FEET) = 18.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
```



```
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.64
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   12.97
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.35
    HALFSTREET FLOOD WIDTH(FEET) =   11.01
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.88
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.69
  LONGEST FLOWPATH FROM NODE  21370.00 TO NODE  21374.00 =  2084.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021374.0 TO NODE LR021375.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1345.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1330.00
  FLOW LENGTH(FEET) =   319.60   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  16.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.90
  PIPE-FLOW(CFS) =     64.95
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.27    Tc(MIN.) =  11.32
  LONGEST FLOWPATH FROM NODE  21370.00 TO NODE  21375.00 =  2404.14 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021375.0 TO NODE LR021375.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  11.32
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.400
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       10.88      0.75      0.60    56
  COMMERCIAL                 B       14.84      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.31
  SUBAREA AREA(ACRES) =   25.72      SUBAREA RUNOFF(CFS) =   73.32
  EFFECTIVE AREA(ACRES) =     49.29   AREA-AVERAGED Fm(INCH/HR) =  0.31
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.41
  TOTAL AREA(ACRES) =     49.29       PEAK FLOW RATE(CFS) =     137.22

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021375.0 TO NODE LR021376.0 IS CODE =  42
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
================================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1330.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1275.00
  FLOW LENGTH(FEET) =  1914.40   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  28.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.71
  PIPE-FLOW(CFS) =    137.22
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.62    Tc(MIN.) =  12.94
  LONGEST FLOWPATH FROM NODE  21370.00 TO NODE  21376.00 =  4318.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021376.0 TO NODE LR021376.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN) =  12.94
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.138
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       33.59      0.75      0.60    56
  MOBILE HOME PARK           B        3.65      0.75      0.25    56
  COMMERCIAL                 B        1.26      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.55
  SUBAREA AREA(ACRES) =   38.50      SUBAREA RUNOFF(CFS) =   94.48
  EFFECTIVE AREA(ACRES) =     87.79   AREA-AVERAGED Fm(INCH/HR) =  0.35
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.47
  TOTAL AREA(ACRES) =     87.79       PEAK FLOW RATE(CFS) =     220.07

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021376.0 TO NODE LR021377.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
================================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1275.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1257.00
  FLOW LENGTH(FEET) =   629.69   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  35.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  21.89
  PIPE-FLOW(CFS) =    220.07
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.48    Tc(MIN.) =  13.42
  LONGEST FLOWPATH FROM NODE  21370.00 TO NODE  21377.00 =  4948.23 FEET.

****************************************************************************
```



```
  FLOW PROCESS FROM NODE LR021377.0 TO NODE LR021377.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN) =  13.42
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.071
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B       12.70      0.75      0.25    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.69      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.34
  SUBAREA AREA(ACRES) =   17.39      SUBAREA RUNOFF(CFS) =   44.02
  EFFECTIVE AREA(ACRES) =    105.18   AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.45
  TOTAL AREA(ACRES) =    105.18       PEAK FLOW RATE(CFS) =     258.74

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021377.0 TO NODE LR021378.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
================================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1257.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1235.00
  FLOW LENGTH(FEET) =  1320.25   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  57.0 INCH PIPE IS  41.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.68
  PIPE-FLOW(CFS) =    258.74
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.18    Tc(MIN.) =  14.59
  LONGEST FLOWPATH FROM NODE  21370.00 TO NODE  21378.00 =  6268.48 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021378.0 TO NODE LR021378.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN) =  14.59
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.919
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B       17.63      0.75      0.25    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.65      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.26
  SUBAREA AREA(ACRES) =   18.28      SUBAREA RUNOFF(CFS) =   44.80
  EFFECTIVE AREA(ACRES) =    123.46   AREA-AVERAGED Fm(INCH/HR) =  0.32
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.42
```

```
  TOTAL AREA(ACRES) =    123.46       PEAK FLOW RATE(CFS) =     289.23

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021378.0 TO NODE LR021378.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  14.59
  RAINFALL INTENSITY(INCH/HR) =   2.92
  AREA-AVERAGED Fm(INCH/HR) =  0.32
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.42
  EFFECTIVE STREAM AREA(ACRES) =   123.46
  TOTAL STREAM AREA(ACRES) =   123.46
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    289.23
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1      2451.79   30.08     2030.17  LR021100.0
     2       289.23   14.59      123.46  LR021370.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.44;30M= 0.91;1H= 1.20;3H= 1.89;6H= 2.52;24H= 5.13
  S-GRAPH: VALLEY(DEV.)= 96.3%;VALLEY(UNDEV.)/DESERT=  3.7%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.50; LAG(HR) = 0.40; Fm(INCH/HR) = 0.44; Ybar = 0.48
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.90; 30M = 0.90; 1HR = 0.90;
  3HR = 0.99; 6HR = 0.99; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   2153.63
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21378.00 = 18071.79 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0280; Lca/L=0.4,n=.0251; Lca/L=0.5,n=.0230;Lca/L=0.6,n=.0215
  TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     508.47
  PEAK FLOW RATE(CFS) =   2563.64

****************************************************************************
  FLOW PROCESS FROM NODE LR021378.0 TO NODE LR021378.0 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 21378.DNA
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =   2153.63  TC(MIN.) =     30.08
  AREA-AVERAGED Fm(INCH/HR)=  0.44   Ybar =  0.48
  PEAK FLOW RATE(CFS)   =   2563.64
============================================================================
============================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

```
**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
         (c) Copyright 1983-2002 Advanced Engineering Software (aes)
             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                           County of San Bernardino
                         Transportation Flood Control

                          Water Resources Division

--------------------------------------------------------------------------
  FILE NAME: LR0214ZZ.Z13
  TIME/DATE OF STUDY: 09:25 09/29/2004
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.2500

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)     (n)
===  =====  ========  =================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
```



```
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


**************************************************************************
  FLOW PROCESS FROM NODE LR021400.0 TO NODE LR021401.0 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   598.36
  ELEVATION DATA: UPSTREAM(FEET) =   1380.00  DOWNSTREAM(FEET) =   1360.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.742
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.271
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        8.19      0.75       0.60    56   10.49
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        0.62      0.75       0.70    56   11.15
  COMMERCIAL                 B        0.44      0.75       0.10    56    7.74
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.58
  SUBAREA RUNOFF(CFS) =     31.92
  TOTAL AREA(ACRES) =      9.25   PEAK FLOW RATE(CFS) =     31.92

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

**************************************************************************
  FLOW PROCESS FROM NODE LR021401.0 TO NODE LR021402.0 IS CODE =  54
--------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1360.00  DOWNSTREAM(FEET) =   1336.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   415.44   CHANNEL SLOPE =  0.0578
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     31.92
  FLOW VELOCITY(FEET/SEC.) =   4.02   FLOW DEPTH(FEET) =   0.73
  TRAVEL TIME(MIN.) =   1.72   Tc(MIN.) =   9.46
```

```
  LONGEST FLOWPATH FROM NODE  21400.00 TO NODE  21402.00 =  1013.80 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021402.0 TO NODE LR021402.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =   9.46
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.786
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.47      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    3.47      SUBAREA RUNOFF(CFS) =   10.42
  EFFECTIVE AREA(ACRES) =     12.72   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.59
  TOTAL AREA(ACRES) =     12.72       PEAK FLOW RATE(CFS) =      38.31

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021402.0 TO NODE LR021403.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1336.00  DOWNSTREAM(FEET) =   1327.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   198.50   CHANNEL SLOPE =  0.0453
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     38.31
  FLOW VELOCITY(FEET/SEC.) =   3.86   FLOW DEPTH(FEET) =   0.81
  TRAVEL TIME(MIN.) =   0.86   Tc(MIN.) =  10.32
  LONGEST FLOWPATH FROM NODE  21400.00 TO NODE  21403.00 =  1212.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021403.0 TO NODE LR021403.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  10.32
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.594
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.90      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    3.90      SUBAREA RUNOFF(CFS) =   11.04
  EFFECTIVE AREA(ACRES) =     16.62   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.59
  TOTAL AREA(ACRES) =     16.62       PEAK FLOW RATE(CFS) =      47.15
```



```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021403.0 TO NODE LR021404.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1327.00  DOWNSTREAM(FEET) =   1310.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   389.91   CHANNEL SLOPE =  0.0436
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     47.15
  FLOW VELOCITY(FEET/SEC.) =   3.99   FLOW DEPTH(FEET) =   0.89
  TRAVEL TIME(MIN.) =   1.63   Tc(MIN.) =  11.95
  LONGEST FLOWPATH FROM NODE  21400.00 TO NODE  21404.00 =  1602.21 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021404.0 TO NODE LR021404.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  11.95
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.291
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.41      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    3.41      SUBAREA RUNOFF(CFS) =    8.72
  EFFECTIVE AREA(ACRES) =     20.03   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.59
  TOTAL AREA(ACRES) =     20.03       PEAK FLOW RATE(CFS) =      51.35

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021404.0 TO NODE LR021405.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1310.00  DOWNSTREAM(FEET) =   1295.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   295.90   CHANNEL SLOPE =  0.0507
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     51.35
  FLOW VELOCITY(FEET/SEC.) =   4.32   FLOW DEPTH(FEET) =   0.89
  TRAVEL TIME(MIN.) =   1.14   Tc(MIN.) =  13.09
  LONGEST FLOWPATH FROM NODE  21400.00 TO NODE  21405.00 =  1898.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021405.0 TO NODE LR021405.0 IS CODE =  81
----------------------------------------------------------------------------
```

```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN) =  13.09
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.116
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        8.54      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    8.54      SUBAREA RUNOFF(CFS) =   20.50
  EFFECTIVE AREA(ACRES) =     28.57   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.59
  TOTAL AREA(ACRES) =     28.57       PEAK FLOW RATE(CFS) =      68.69

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

********************************************************************************
  FLOW PROCESS FROM NODE LR021405.0 TO NODE LR021406.0 IS CODE =  54
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1295.00  DOWNSTREAM(FEET) =   1285.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   314.00   CHANNEL SLOPE =  0.0318
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  20.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     68.69
  FLOW VELOCITY(FEET/SEC.) =   3.64   FLOW DEPTH(FEET) =   0.97
  TRAVEL TIME(MIN.) =   1.44   Tc(MIN.) =  14.53
  LONGEST FLOWPATH FROM NODE  21400.00 TO NODE  21406.00 =  2212.11 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE LR021406.0 TO NODE LR021406.0 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN) =  14.53
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.927
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       26.61      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   26.61      SUBAREA RUNOFF(CFS) =   59.35
  EFFECTIVE AREA(ACRES) =     55.18   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     55.18       PEAK FLOW RATE(CFS) =     123.18

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

********************************************************************************
  FLOW PROCESS FROM NODE LR021406.0 TO NODE LR021417.0 IS CODE =  42
```



```
--------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
================================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1285.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1250.00
  FLOW LENGTH(FEET) =  1395.25   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  USER SPECIFIED PIPE SYSTEM UNDER PRESSURE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.77
  PIPE-FLOW(CFS) =     97.40
  PIPEFLOW TRAVEL TIME(MIN.) =   1.69    Tc(MIN.) =  16.22

  *DEFICIENCY ANALYSIS(BASED ON REPLACEMENT SYSTEM HYDROLOGY):
  *REPLACEMENT PIPE SYSTEM (MANNING'S N = .0130):
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  29.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.10
  PIPE-FLOW(CFS) =    123.18
  PIPEFLOW TRAVEL TIME(MIN.) =   1.36    Tc(MIN.) =  15.89

  *PARALLEL PIPE SYSTEM (MANNING'S N = .0130):
  PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  LONGEST FLOWPATH FROM NODE  21400.00 TO NODE  21417.00 =  3607.36 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE LR021417.0 TO NODE LR021417.0 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN) =  15.89
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.774
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        1.06      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.55      0.75      0.60    56
  MOBILE HOME PARK           B       12.65      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.34
  SUBAREA AREA(ACRES) =   19.26      SUBAREA RUNOFF(CFS) =   43.64
  EFFECTIVE AREA(ACRES) =     74.44   AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.53
  TOTAL AREA(ACRES) =     74.44       PEAK FLOW RATE(CFS) =     159.23

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 2.96

********************************************************************************
  FLOW PROCESS FROM NODE LR021417.0 TO NODE LR021417.0 IS CODE =   1
--------------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.89
```

```
  RAINFALL INTENSITY(INCH/HR) =   2.77
  AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.53
  EFFECTIVE STREAM AREA(ACRES) =    74.44
  TOTAL STREAM AREA(ACRES) =    74.44
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    159.23

****************************************************************************
  FLOW PROCESS FROM NODE LR021410.0 TO NODE LR021411.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   770.62
  ELEVATION DATA: UPSTREAM(FEET) =   1370.00  DOWNSTREAM(FEET) =   1345.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.679
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.337
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.87      0.75      0.60    56   11.68
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.17      0.75      0.70    56   12.42
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.62
  SUBAREA RUNOFF(CFS) =     13.02
  TOTAL AREA(ACRES) =      5.04   PEAK FLOW RATE(CFS) =     13.02

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021411.0 TO NODE LR021412.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1345.00  DOWNSTREAM(FEET) =   1312.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   618.61   CHANNEL SLOPE =  0.0533
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     13.02
  FLOW VELOCITY(FEET/SEC.) =   2.35   FLOW DEPTH(FEET) =   0.33
  TRAVEL TIME(MIN.) =   4.39   Tc(MIN.) =  16.06
  LONGEST FLOWPATH FROM NODE  21410.00 TO NODE  21412.00 =  1389.23 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021412.0 TO NODE LR021412.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  16.06
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.756
  SUBAREA LOSS RATE DATA(AMC  II):
```



```
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        7.50      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =     7.50      SUBAREA RUNOFF(CFS) =   15.57
  EFFECTIVE AREA(ACRES) =     12.54   AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.61
  TOTAL AREA(ACRES) =     12.54       PEAK FLOW RATE(CFS) =      25.96

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021412.0 TO NODE LR021413.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1312.00  DOWNSTREAM(FEET) =   1300.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   262.39   CHANNEL SLOPE =  0.0457
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     25.96
  FLOW VELOCITY(FEET/SEC.) =   2.60   FLOW DEPTH(FEET) =   0.45
  TRAVEL TIME(MIN.) =   1.69   Tc(MIN.) =  17.75
  LONGEST FLOWPATH FROM NODE  21410.00 TO NODE  21413.00 =  1651.62 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021413.0 TO NODE LR021413.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.75
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.596
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.80      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =     1.80      SUBAREA RUNOFF(CFS) =    3.48
  EFFECTIVE AREA(ACRES) =     14.34   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.61
  TOTAL AREA(ACRES) =     14.34       PEAK FLOW RATE(CFS) =      27.63

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021413.0 TO NODE LR021414.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1300.00  DOWNSTREAM(FEET) =   1287.00
```

```
  CHANNEL LENGTH THRU SUBAREA(FEET) =   324.82   CHANNEL SLOPE =  0.0400
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     27.63
  FLOW VELOCITY(FEET/SEC.) =   2.52   FLOW DEPTH(FEET) =   0.47
  TRAVEL TIME(MIN.) =   2.15   Tc(MIN.) =  19.90
  LONGEST FLOWPATH FROM NODE  21410.00 TO NODE  21414.00 =  1976.44 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021414.0 TO NODE LR021414.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  19.90
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.424
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.90      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    5.90      SUBAREA RUNOFF(CFS) =   10.49
  EFFECTIVE AREA(ACRES) =     20.24   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.61
  TOTAL AREA(ACRES) =     20.24       PEAK FLOW RATE(CFS) =      35.90

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021414.0 TO NODE LR021415.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1287.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1277.00
  FLOW LENGTH(FEET) =   263.30   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  12.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.71
  PIPE-FLOW(CFS) =     35.90
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =  20.18
  LONGEST FLOWPATH FROM NODE  21410.00 TO NODE  21415.00 =  2239.74 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021415.0 TO NODE LR021415.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  20.18
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.404
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```



```
  MOBILE HOME PARK           B        0.54      0.75      0.25    56
  PUBLIC PARK                B        1.31      0.75      0.85    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.69      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.65
  SUBAREA AREA(ACRES) =    2.54      SUBAREA RUNOFF(CFS) =    4.38
  EFFECTIVE AREA(ACRES) =     22.78   AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.61
  TOTAL AREA(ACRES) =     22.78       PEAK FLOW RATE(CFS) =      39.91

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021415.0 TO NODE LR021416.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1277.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1263.00
  FLOW LENGTH(FEET) =   509.70   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  15.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.37
  PIPE-FLOW(CFS) =     39.91
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.59    Tc(MIN.) =  20.77
  LONGEST FLOWPATH FROM NODE  21410.00 TO NODE  21416.00 =  2749.44 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021416.0 TO NODE LR021416.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  20.77
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.362
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B        2.38      0.75      0.25    56
  PUBLIC PARK                B        2.15      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.53
  SUBAREA AREA(ACRES) =    4.53      SUBAREA RUNOFF(CFS) =    8.00
  EFFECTIVE AREA(ACRES) =     27.31   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     27.31       PEAK FLOW RATE(CFS) =      47.06

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021416.0 TO NODE LR021417.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
================================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1263.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1250.00
  FLOW LENGTH(FEET) =   417.28   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  15.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.67
  PIPE-FLOW(CFS) =     47.06
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.44    Tc(MIN.) =  21.21
  LONGEST FLOWPATH FROM NODE  21410.00 TO NODE  21417.00 =  3166.72 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021417.0 TO NODE LR021417.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.21
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.333
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.24      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.73      0.75      0.60    56
  MOBILE HOME PARK           B        0.34      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.42
  SUBAREA AREA(ACRES) =    1.31      SUBAREA RUNOFF(CFS) =    2.38
  EFFECTIVE AREA(ACRES) =     28.62   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.59
  TOTAL AREA(ACRES) =     28.62       PEAK FLOW RATE(CFS) =      48.71

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021417.0 TO NODE LR021417.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  21.21
  RAINFALL INTENSITY(INCH/HR) =   2.33
  AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.59
  EFFECTIVE STREAM AREA(ACRES) =    28.62
  TOTAL STREAM AREA(ACRES) =    28.62
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     48.71

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
```



```
      1    159.23  15.89    2.774  0.75( 0.40) 0.53    74.4 LR021400.0
      2     48.71  21.21    2.333  0.75( 0.44) 0.59    28.6 LR021410.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    204.24  15.89    2.774  0.75( 0.41) 0.54    95.9 LR021400.0
      2    178.37  21.21    2.333  0.75( 0.41) 0.55   103.1 LR021410.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   204.24    Tc(MIN.) =    15.89
  EFFECTIVE AREA(ACRES) =    95.88   AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.54
  TOTAL AREA(ACRES) =    103.06
  LONGEST FLOWPATH FROM NODE  21400.00 TO NODE  21417.00 =  3607.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021417.0 TO NODE LR021418.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1250.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1218.00
  FLOW LENGTH(FEET) =  2374.87   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  USER SPECIFIED PIPE SYSTEM UNDER PRESSURE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.73
  PIPE-FLOW(CFS) =    180.72
  PIPEFLOW TRAVEL TIME(MIN.) =   3.11    Tc(MIN.) =  19.00

  *DEFICIENCY ANALYSIS(BASED ON REPLACEMENT SYSTEM HYDROLOGY):
  *REPLACEMENT PIPE SYSTEM (MANNING'S N = .0130):
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  42.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.08
  PIPE-FLOW(CFS) =    204.24
  PIPEFLOW TRAVEL TIME(MIN.) =   2.63    Tc(MIN.) =  18.52

  *PARALLEL PIPE SYSTEM (MANNING'S N = .0130):
  PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  LONGEST FLOWPATH FROM NODE  21400.00 TO NODE  21418.00 =  5982.23 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021418.0 TO NODE LR021418.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  18.52
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.531
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
```

```
  "3-4 DWELLINGS/ACRE"       B        3.88      0.75      0.60    56
  COMMERCIAL                 B        9.63      0.75      0.10    56
  MOBILE HOME PARK           B       29.24      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.25
  SUBAREA AREA(ACRES) =   42.75      SUBAREA RUNOFF(CFS) =   90.24
  EFFECTIVE AREA(ACRES) =    138.63   AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.45
  TOTAL AREA(ACRES) =    145.81       PEAK FLOW RATE(CFS) =     273.49

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021418.0 TO NODE LR021418.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021378.0 TO NODE LR021378.0 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 21378.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2563.64    Tc(MIN.) =  30.08
  AREA-AVERAGED Fm(INCH/HR) =  0.44    Ybar = 0.48
  TOTAL AREA(ACRES) =    2153.63
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21378.00 = 18071.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021378.0 TO NODE LR021378.0 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2563.64    Tc(MIN.) =  30.08
  AREA-AVERAGED Fm(INCH/HR) =  0.44    Ybar = 0.48
  TOTAL AREA(ACRES) =    2153.63
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21378.00 = 18071.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021378.0 TO NODE LR021378.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021378.0 TO NODE LR021418.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1235.00  DOWNSTREAM(FEET) =   1218.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1235.33   CHANNEL SLOPE =  0.0138
  CHANNEL BASE(FEET) =   13.00   "Z" FACTOR =   2.000
```



```
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   6.50
  CHANNEL FLOW THRU SUBAREA(CFS) =   2563.64
  FLOW VELOCITY(FEET/SEC.) =  24.60   FLOW DEPTH(FEET) =   4.67
  TRAVEL TIME(MIN.) =   0.84   Tc(MIN.) =  30.92
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21418.00 = 19307.12 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021418.0 TO NODE LR021418.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  30.92
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.861
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        7.20      0.75      0.60    56
  COMMERCIAL                 B       26.95      0.75      0.10    56
  MOBILE HOME PARK           B       13.18      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.22
  SUBAREA AREA(ACRES) =   47.33
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.44;30M= 0.91;1H= 1.20;3H= 1.89;6H= 2.52;24H= 5.12
  S-GRAPH: VALLEY(DEV.)= 96.4%;VALLEY(UNDEV.)/DESERT=  3.6%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.52; LAG(HR) = 0.41; Fm(INCH/HR) = 0.44; Ybar = 0.48
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.90; 30M = 0.90; 1HR = 0.90;
  3HR = 0.99; 6HR = 0.99; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   2200.96
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21418.00 = 19307.12 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0271; Lca/L=0.4,n=.0243; Lca/L=0.5,n=.0223;Lca/L=0.6,n=.0208
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     523.60
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   2611.14
  TOTAL AREA(ACRES) =   2200.96       PEAK FLOW RATE(CFS) =    2611.14

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.84; 6HR = 2.35; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021418.0 TO NODE LR021418.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     2611.14    Tc(MIN.) =  30.92
  AREA-AVERAGED Fm(INCH/HR) =  0.44    Ybar = 0.48
  TOTAL AREA(ACRES) =    2200.96
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21418.00 = 19307.12 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    273.49  18.52    2.531  0.75( 0.34) 0.45   138.6 LR021400.0
```

```
     2    239.56  23.94    2.169  0.75( 0.34) 0.46   145.8 LR021410.0
  LONGEST FLOWPATH FROM NODE  21400.00 TO NODE  21418.00 =  5982.23 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.44;30M= 0.91;1H= 1.20;3H= 1.88;6H= 2.50;24H= 5.08
  S-GRAPH: VALLEY(DEV.)= 96.6%;VALLEY(UNDEV.)/DESERT=  3.4%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.52; LAG(HR) = 0.41; Fm(INCH/HR) = 0.43; Ybar = 0.47
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.90; 30M = 0.90; 1HR = 0.90;
  3HR = 0.98; 6HR = 0.99; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   2346.77
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21418.00 = 19307.12 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0271; Lca/L=0.4,n=.0243; Lca/L=0.5,n=.0223;Lca/L=0.6,n=.0208
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     557.67
  PEAK FLOW RATE(CFS) =    2771.38

****************************************************************************
  FLOW PROCESS FROM NODE LR021418.0 TO NODE LR021418.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021418.0 TO NODE LR021419.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1218.00  DOWNSTREAM(FEET) =   1200.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1971.28   CHANNEL SLOPE =  0.0091
  CHANNEL BASE(FEET) =   13.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   6.50
  CHANNEL FLOW THRU SUBAREA(CFS) =   2771.38
  FLOW VELOCITY(FEET/SEC.) =  21.63   FLOW DEPTH(FEET) =   5.39
  TRAVEL TIME(MIN.) =   1.52   Tc(MIN.) =  32.44
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21419.00 = 21278.40 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021419.0 TO NODE LR021419.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  32.44
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.808
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       13.22      0.75      0.60    56
  COMMERCIAL                 B       80.88      0.75      0.10    56
  MOBILE HOME PARK           B       29.32      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.19
  SUBAREA AREA(ACRES) =  123.42
  UNIT-HYDROGRAPH DATA:
```



```
  RAINFALL(INCH): 5M= 0.45;30M= 0.91;1H= 1.20;3H= 1.87;6H= 2.48;24H= 5.07
  S-GRAPH: VALLEY(DEV.)= 96.8%;VALLEY(UNDEV.)/DESERT=  3.2%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.54; LAG(HR) = 0.43; Fm(INCH/HR) = 0.42; Ybar = 0.46
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.89; 30M = 0.89; 1HR = 0.89;
  3HR = 0.98; 6HR = 0.99; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   2470.19
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21419.00 = 21278.40 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0261; Lca/L=0.4,n=.0234; Lca/L=0.5,n=.0215;Lca/L=0.6,n=.0200
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     597.93
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   2885.13
  TOTAL AREA(ACRES) =   2470.19       PEAK FLOW RATE(CFS) =    2885.13

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021419.0 TO NODE LR021420.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1200.00  DOWNSTREAM(FEET) =  1170.00
  FLOW LENGTH(FEET) =  3014.53   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  19.00   GIVEN BOX HEIGHT(FEET) =   5.00
  *GIVEN BOX HEIGHT(FEET) =   5.00   ESTIMATED BOX BASEWIDTH(FEET) =   35.07
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  16.45
  BOX-FLOW(CFS) =   2885.13
  BOX-FLOW TRAVEL TIME(MIN.) =   3.05    Tc(MIN.) =  35.49
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21420.00 = 24292.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021420.0 TO NODE LR021420.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  35.49
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.713
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       73.53      0.75      0.10    56
  MOBILE HOME PARK           B       59.58      0.75      0.25    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       44.41      0.75      0.60    56
  PUBLIC PARK                B       28.10      0.75      0.85    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B       24.44      0.75      0.40    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.29      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.37
  SUBAREA AREA(ACRES) =  234.35
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.91;1H= 1.21;3H= 1.87;6H= 2.46;24H= 5.04
  S-GRAPH: VALLEY(DEV.)= 97.1%;VALLEY(UNDEV.)/DESERT=  2.9%
```

```
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.59; LAG(HR) = 0.47; Fm(INCH/HR) = 0.40; Ybar = 0.45
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.88; 30M = 0.88; 1HR = 0.88;
  3HR = 0.98; 6HR = 0.99; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   2704.54
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21420.00 = 24292.93 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0254; Lca/L=0.4,n=.0227; Lca/L=0.5,n=.0209;Lca/L=0.6,n=.0195
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     662.20
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   2955.28
  TOTAL AREA(ACRES) =   2704.54       PEAK FLOW RATE(CFS) =    2955.28

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021420.0 TO NODE LR021421.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1170.00  DOWNSTREAM(FEET) =  1159.00
  FLOW LENGTH(FEET) =   874.60   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  19.00   GIVEN BOX HEIGHT(FEET) =   5.00
  *GIVEN BOX HEIGHT(FEET) =   5.00   ESTIMATED BOX BASEWIDTH(FEET) =   32.19
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  18.36
  BOX-FLOW(CFS) =   2955.28
  BOX-FLOW TRAVEL TIME(MIN.) =   0.79    Tc(MIN.) =  36.29
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21421.00 = 25167.53 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021421.0 TO NODE LR021421.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  36.29
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.690
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        0.85      0.75      0.85    56
  COMMERCIAL                 B        0.87      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.17      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.48
  SUBAREA AREA(ACRES) =    1.89
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.91;1H= 1.21;3H= 1.87;6H= 2.46;24H= 5.04
  S-GRAPH: VALLEY(DEV.)= 97.1%;VALLEY(UNDEV.)/DESERT=  2.9%
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.60; LAG(HR) = 0.48; Fm(INCH/HR) = 0.40; Ybar = 0.45
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.88; 30M = 0.88; 1HR = 0.88;
  3HR = 0.98; 6HR = 0.99; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   2706.43
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21421.00 = 25167.53 FEET.
```



```
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0252; Lca/L=0.4,n=.0226; Lca/L=0.5,n=.0207;Lca/L=0.6,n=.0193
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     662.66
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   2882.15
  TOTAL AREA(ACRES) =   2706.43       PEAK FLOW RATE(CFS) =    2955.28
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021421.0 TO NODE LR021421.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021070.0 TO NODE LR021070.0 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 21070.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     6375.22    Tc(MIN.) =  53.61
  AREA-AVERAGED Fm(INCH/HR) =  0.50    Ybar = 0.50
  TOTAL AREA(ACRES) =   11023.91
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21070.00 = 47862.35 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021070.0 TO NODE LR021070.0 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     6375.22    Tc(MIN.) =  53.61
  AREA-AVERAGED Fm(INCH/HR) =  0.50    Ybar = 0.50
  TOTAL AREA(ACRES) =   11023.91
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21070.00 = 47862.35 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021070.0 TO NODE LR021070.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021070.0 TO NODE LR021421.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1183.00  DOWNSTREAM(FEET) =   1159.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1867.34   CHANNEL SLOPE =  0.0129
  CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   6375.22
  FLOW VELOCITY(FEET/SEC.) =  29.95   FLOW DEPTH(FEET) =   6.46
```

```
  TRAVEL TIME(MIN.) =   1.04   Tc(MIN.) =  54.65
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21421.00 = 49729.69 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021421.0 TO NODE LR021421.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  54.65
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.322
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       51.49      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.09      0.75      0.60    56
  PUBLIC PARK                B        3.37      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.18
  SUBAREA AREA(ACRES) =   59.95
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.91;1H= 1.20;3H= 1.99;6H= 2.74;24H= 6.10
  S-GRAPH: VALLEY(DEV.)= 71.9%;VALLEY(UNDEV.)/DESERT= 28.1%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.91; LAG(HR) = 0.73; Fm(INCH/HR) = 0.49; Ybar = 0.50
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.65; 30M = 0.66; 1HR = 0.67;
  3HR = 0.94; 6HR = 0.97; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  11083.86
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21421.00 = 49729.69 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0241; Lca/L=0.4,n=.0216; Lca/L=0.5,n=.0199;Lca/L=0.6,n=.0185
  TIME OF PEAK FLOW(HR) = 16.75  RUNOFF VOLUME(AF) =    2863.56
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   6319.65
  TOTAL AREA(ACRES) =  11083.86       PEAK FLOW RATE(CFS) =    6375.22
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021421.0 TO NODE LR021421.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     6375.22    Tc(MIN.) =  54.65
  AREA-AVERAGED Fm(INCH/HR) =  0.49    Ybar = 0.50
  TOTAL AREA(ACRES) =   11083.86
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21421.00 = 49729.69 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     2955.28    Tc(MIN.) =  36.29
  AREA-AVERAGED Fm(INCH/HR) =  0.40    Ybar = 0.45
  TOTAL AREA(ACRES) =    2706.43
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21421.00 = 25167.53 FEET.
```



```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.91;1H= 1.20;3H= 1.97;6H= 2.69;24H= 5.89
  S-GRAPH: VALLEY(DEV.)= 76.8%;VALLEY(UNDEV.)/DESERT= 23.2%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.91; LAG(HR) = 0.73; Fm(INCH/HR) = 0.48; Ybar = 0.49
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.61; 30M = 0.63; 1HR = 0.63;
  3HR = 0.92; 6HR = 0.96; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  13790.29
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21421.00 = 49729.69 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0241; Lca/L=0.4,n=.0216; Lca/L=0.5,n=.0199;Lca/L=0.6,n=.0185
  TIME OF PEAK FLOW(HR) = 16.75  RUNOFF VOLUME(AF) =    3477.43
  PEAK FLOW RATE(CFS) =    7521.61

****************************************************************************
  FLOW PROCESS FROM NODE LR021421.0 TO NODE LR021421.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021421.0 TO NODE LR021422.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1159.00  DOWNSTREAM(FEET) =   1153.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   938.13   CHANNEL SLOPE =  0.0064
  CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   7521.61
  FLOW VELOCITY(FEET/SEC.) =  24.31   FLOW DEPTH(FEET) =   8.40
  TRAVEL TIME(MIN.) =   0.64   Tc(MIN.) =  55.29
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21422.00 = 50667.82 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021422.0 TO NODE LR021422.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  55.29
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.313
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       65.40      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.90      0.75      0.60    56
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B        4.85      0.75      0.20    56
  PUBLIC PARK                B        2.00      0.75      0.85    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B       47.14      0.75      0.40    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.24
  SUBAREA AREA(ACRES) =  121.29
```

```
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.91;1H= 1.20;3H= 1.97;6H= 2.69;24H= 5.88
  S-GRAPH: VALLEY(DEV.)= 77.0%;VALLEY(UNDEV.)/DESERT= 23.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.92; LAG(HR) = 0.74; Fm(INCH/HR) = 0.47; Ybar = 0.49
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.61; 30M = 0.62; 1HR = 0.63;
  3HR = 0.92; 6HR = 0.96; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  13911.58
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21422.00 = 50667.82 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0240; Lca/L=0.4,n=.0215; Lca/L=0.5,n=.0198;Lca/L=0.6,n=.0184
  TIME OF PEAK FLOW(HR) = 16.75  RUNOFF VOLUME(AF) =    3514.47
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   7514.31
  TOTAL AREA(ACRES) =  13911.58       PEAK FLOW RATE(CFS) =    7521.61
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021422.0 TO NODE LR021423.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1153.00  DOWNSTREAM(FEET) =   1148.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   670.94   CHANNEL SLOPE =  0.0075
  CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   7521.61
  FLOW VELOCITY(FEET/SEC.) =  25.70   FLOW DEPTH(FEET) =   8.09
  TRAVEL TIME(MIN.) =   0.44   Tc(MIN.) =  55.73
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21423.00 = 51338.76 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021423.0 TO NODE LR021423.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  55.73
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.307
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.99      0.75      0.60    56
  COMMERCIAL                 B       11.78      0.75      0.10    56
  MOBILE HOME PARK           B        4.78      0.75      0.25    56
  PUBLIC PARK                B        1.74      0.75      0.85    56
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B        0.99      0.75      0.20    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.25
  SUBAREA AREA(ACRES) =   21.28
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.91;1H= 1.20;3H= 1.97;6H= 2.68;24H= 5.88
  S-GRAPH: VALLEY(DEV.)= 77.0%;VALLEY(UNDEV.)/DESERT= 23.0%
```



```
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.93; LAG(HR) = 0.74; Fm(INCH/HR) = 0.47; Ybar = 0.49
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.60; 30M = 0.62; 1HR = 0.63;
  3HR = 0.92; 6HR = 0.96; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  13932.86
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21423.00 = 51338.76 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0239; Lca/L=0.4,n=.0214; Lca/L=0.5,n=.0197;Lca/L=0.6,n=.0184
  TIME OF PEAK FLOW(HR) = 16.75  RUNOFF VOLUME(AF) =    3520.93
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   7472.56
  TOTAL AREA(ACRES) =  13932.86       PEAK FLOW RATE(CFS) =    7521.61
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021423.0 TO NODE LR021439.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1148.00  DOWNSTREAM(FEET) =   1143.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   702.31   CHANNEL SLOPE =  0.0071
  CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   7521.61
  FLOW VELOCITY(FEET/SEC.) =  25.27   FLOW DEPTH(FEET) =   8.18
  TRAVEL TIME(MIN.) =   0.46   Tc(MIN.) =  56.19
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21439.00 = 52041.07 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021439.0 TO NODE LR021439.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  56.19
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.300
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.52      0.75      0.60    56
  PUBLIC PARK                B        1.21      0.75      0.85    56
  MOBILE HOME PARK           B        4.21      0.75      0.25    56
  SCHOOL                     B        0.18      0.75      0.60    56
  COMMERCIAL                 B        0.96      0.75      0.10    56
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B        0.39      0.75      0.20    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.36
  SUBAREA AREA(ACRES) =    7.47
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.91;1H= 1.20;3H= 1.97;6H= 2.68;24H= 5.88
  S-GRAPH: VALLEY(DEV.)= 77.1%;VALLEY(UNDEV.)/DESERT= 22.9%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.94; LAG(HR) = 0.75; Fm(INCH/HR) = 0.47; Ybar = 0.49
```

```
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.60; 30M = 0.62; 1HR = 0.63;
  3HR = 0.92; 6HR = 0.96; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  13940.33
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21439.00 = 52041.07 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0238; Lca/L=0.4,n=.0213; Lca/L=0.5,n=.0196;Lca/L=0.6,n=.0183
  TIME OF PEAK FLOW(HR) = 16.75  RUNOFF VOLUME(AF) =    3522.92
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   7412.92
  TOTAL AREA(ACRES) =  13940.33       PEAK FLOW RATE(CFS) =    7521.61
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021439.0 TO NODE LR021439.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =    7521.61    Tc(MIN.) =  56.19
  AREA-AVERAGED Fm(INCH/HR) =  0.47   Ybar = 0.49
  TOTAL AREA(ACRES) =   13940.33

****************************************************************************
  FLOW PROCESS FROM NODE LR021430.0 TO NODE LR021431.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   200.00
  ELEVATION DATA: UPSTREAM(FEET) =   1220.00  DOWNSTREAM(FEET) =   1214.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.103
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.484
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.20      0.75      0.50    56    6.53
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.38      0.75      0.60    56    6.92
  COMMERCIAL                 B        3.33      0.75      0.10    56    5.10
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.31
  SUBAREA RUNOFF(CFS) =     27.92
  TOTAL AREA(ACRES) =      5.91   PEAK FLOW RATE(CFS) =     27.92

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.90; 6HR = 2.48; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021431.0 TO NODE LR021432.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
```



```
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1214.00  DOWNSTREAM ELEVATION(FEET) = 1209.00
  STREET LENGTH(FEET) =   286.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.03

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      42.35
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.61
    HALFSTREET FLOOD WIDTH(FEET) =   22.48
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.04
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.46
  STREET FLOW TRAVEL TIME(MIN.) =   1.18   Tc(MIN.) =   6.28
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.840
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.32      0.75      0.50    56
  COMMERCIAL                 B        5.86      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.61      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.16
  SUBAREA AREA(ACRES) =    6.79      SUBAREA RUNOFF(CFS) =   28.83
  EFFECTIVE AREA(ACRES) =     12.70    AREA-AVERAGED Fm(INCH/HR) =  0.18
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.23
  TOTAL AREA(ACRES) =     12.70        PEAK FLOW RATE(CFS) =      53.32

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.83; 6HR = 2.34; 24HR = 4.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.65   HALFSTREET FLOOD WIDTH(FEET) =  24.59
  FLOW VELOCITY(FEET/SEC.) =  4.28   DEPTH*VELOCITY(FT*FT/SEC.) =   2.78
  LONGEST FLOWPATH FROM NODE  21430.00 TO NODE  21432.00 =   486.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021432.0 TO NODE LR021433.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1209.00  DOWNSTREAM ELEVATION(FEET) = 1206.00
  STREET LENGTH(FEET) =   254.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
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  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      66.27
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.73
    HALFSTREET FLOOD WIDTH(FEET) =   32.03
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.88
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.84
  STREET FLOW TRAVEL TIME(MIN.) =   1.09   Tc(MIN.) =   7.38
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.397
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.33      0.75      0.50    56
  COMMERCIAL                 B        5.82      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.58      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.16
  SUBAREA AREA(ACRES) =    6.73      SUBAREA RUNOFF(CFS) =   25.89
  EFFECTIVE AREA(ACRES) =     19.43    AREA-AVERAGED Fm(INCH/HR) =  0.16
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.21
  TOTAL AREA(ACRES) =     19.43        PEAK FLOW RATE(CFS) =      74.14

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.26; 24HR = 4.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.76   HALFSTREET FLOOD WIDTH(FEET) =  34.53
  FLOW VELOCITY(FEET/SEC.) =  3.95   DEPTH*VELOCITY(FT*FT/SEC.) =   2.99
  LONGEST FLOWPATH FROM NODE  21430.00 TO NODE  21433.00 =   740.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021433.0 TO NODE LR021434.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1206.00  DOWNSTREAM ELEVATION(FEET) = 1202.00
  STREET LENGTH(FEET) =   349.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
```



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  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      91.23
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.81
    HALFSTREET FLOOD WIDTH(FEET) =   39.69
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.04
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.27
  STREET FLOW TRAVEL TIME(MIN.) =   1.44   Tc(MIN.) =   8.82
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.950
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.43      0.75      0.50    56
  COMMERCIAL                 B        8.62      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.86      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.16
  SUBAREA AREA(ACRES) =    9.91      SUBAREA RUNOFF(CFS) =   34.16
  EFFECTIVE AREA(ACRES) =     29.34    AREA-AVERAGED Fm(INCH/HR) =  0.14
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.19
  TOTAL AREA(ACRES) =     29.34        PEAK FLOW RATE(CFS) =     100.50

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.83   HALFSTREET FLOOD WIDTH(FEET) =  41.88
  FLOW VELOCITY(FEET/SEC.) =  4.12   DEPTH*VELOCITY(FT*FT/SEC.) =   3.43
  LONGEST FLOWPATH FROM NODE  21430.00 TO NODE  21434.00 =  1089.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021434.0 TO NODE LR021435.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1202.00  DOWNSTREAM ELEVATION(FEET) = 1195.00
  STREET LENGTH(FEET) =   602.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     129.19
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.89
    HALFSTREET FLOOD WIDTH(FEET) =   47.97
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.33
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    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.86
  STREET FLOW TRAVEL TIME(MIN.) =   2.32   Tc(MIN.) =  11.13
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.434
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.83      0.75      0.50    56
  COMMERCIAL                 B       16.10      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.38      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.18
  SUBAREA AREA(ACRES) =   19.31      SUBAREA RUNOFF(CFS) =   57.35
  EFFECTIVE AREA(ACRES) =     48.65    AREA-AVERAGED Fm(INCH/HR) =  0.14
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.19
  TOTAL AREA(ACRES) =     48.65        PEAK FLOW RATE(CFS) =     144.22

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.92   HALFSTREET FLOOD WIDTH(FEET) =  50.94
  FLOW VELOCITY(FEET/SEC.) =  4.40   DEPTH*VELOCITY(FT*FT/SEC.) =   4.05
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  602.0 FT WITH ELEVATION-DROP =   7.0 FT, IS   63.0 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21435.00
  LONGEST FLOWPATH FROM NODE  21430.00 TO NODE  21435.00 =  1691.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021435.0 TO NODE LR021436.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1195.00  DOWNSTREAM ELEVATION(FEET) = 1183.00
  STREET LENGTH(FEET) =   889.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     184.96
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.96
    HALFSTREET FLOOD WIDTH(FEET) =   53.83
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.98
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.80
  STREET FLOW TRAVEL TIME(MIN.) =   2.98   Tc(MIN.) =  14.11
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.979
```



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  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.44      0.75      0.60    56
  COMMERCIAL                 B       28.76      0.75      0.10    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.28      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.14
  SUBAREA AREA(ACRES) =   31.48      SUBAREA RUNOFF(CFS) =   81.38
  EFFECTIVE AREA(ACRES) =     80.13    AREA-AVERAGED Fm(INCH/HR) =  0.13
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.17
  TOTAL AREA(ACRES) =     80.13        PEAK FLOW RATE(CFS) =     205.67

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.99   HALFSTREET FLOOD WIDTH(FEET) =  55.11
  FLOW VELOCITY(FEET/SEC.) =  5.15   DEPTH*VELOCITY(FT*FT/SEC.) =   5.09
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  889.5 FT WITH ELEVATION-DROP =  12.0 FT, IS   95.6 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21436.00
  LONGEST FLOWPATH FROM NODE  21430.00 TO NODE  21436.00 =  2580.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021436.0 TO NODE LR021437.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1183.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1172.00
  FLOW LENGTH(FEET) =   717.00   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  34.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.41
  PIPE-FLOW(CFS) =    205.67
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.73    Tc(MIN.) =  14.84
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.890
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       22.52      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.08      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.18
  SUBAREA AREA(ACRES) =   26.60      SUBAREA RUNOFF(CFS) =   66.02
  EFFECTIVE AREA(ACRES) =    106.73    AREA-AVERAGED Fm(INCH/HR) =  0.13
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.17
  TOTAL AREA(ACRES) =    106.73        PEAK FLOW RATE(CFS) =    265.28

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75
```

```
  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 39.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   59.61
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.68
    HALFSTREET FLOOD WIDTH(FEET) =   27.19
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.19
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.87
  LONGEST FLOWPATH FROM NODE  21430.00 TO NODE  21437.00 =  3297.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021437.0 TO NODE LR021438.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1172.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1157.00
  FLOW LENGTH(FEET) =  1061.00   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  42.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.72
  PIPE-FLOW(CFS) =    265.28
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.07    Tc(MIN.) =  15.91
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.772
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                B        0.28      0.63      1.00    65
  COMMERCIAL                B       35.84      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"      B        5.10      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.17
  SUBAREA AREA(ACRES) =   41.22      SUBAREA RUNOFF(CFS) =   98.19
  EFFECTIVE AREA(ACRES) =    147.95    AREA-AVERAGED Fm(INCH/HR) =  0.13
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.17
  TOTAL AREA(ACRES) =    147.95        PEAK FLOW RATE(CFS) =    352.11

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 39.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
```



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  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   86.83
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.77
    HALFSTREET FLOOD WIDTH(FEET) =   36.10
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.37
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.38
  LONGEST FLOWPATH FROM NODE  21430.00 TO NODE  21438.00 =  4358.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021438.0 TO NODE LR021439.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1157.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1143.00
  FLOW LENGTH(FEET) =   895.00   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  USER SPECIFIED PIPE SYSTEM UNDER PRESSURE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.28
  PIPE-FLOW(CFS) =    300.37
  PIPEFLOW TRAVEL TIME(MIN.) =   0.98    Tc(MIN.) =  16.89
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.674
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                B        0.33      0.63      1.00    65
  COMMERCIAL                B       21.36      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"      B        3.94      0.75      0.60    56
  MOBILE HOME PARK          B        2.98      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.19
  SUBAREA AREA(ACRES) =   28.61      SUBAREA RUNOFF(CFS) =   65.14
  EFFECTIVE AREA(ACRES) =    176.56    AREA-AVERAGED Fm(INCH/HR) =  0.13
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.17
  TOTAL AREA(ACRES) =    176.56        PEAK FLOW RATE(CFS) =    404.30

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 39.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
```

```
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  103.94
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.80
    HALFSTREET FLOOD WIDTH(FEET) =   39.06
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.70
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.78
  LONGEST FLOWPATH FROM NODE  21430.00 TO NODE  21439.00 =  5253.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021439.0 TO NODE LR021439.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  16.89
  RAINFALL INTENSITY(INCH/HR) =   2.67
  AREA-AVERAGED Fm(INCH/HR) =  0.13
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.17
  EFFECTIVE STREAM AREA(ACRES) =   176.56
  TOTAL STREAM AREA(ACRES) =   176.56
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    404.30
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1      7521.61   56.19    13940.33  LR020120.0
     2       404.30   16.89      176.56  LR021430.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.91;1H= 1.21;3H= 1.97;6H= 2.68;24H= 5.86
  S-GRAPH: VALLEY(DEV.)= 77.3%;VALLEY(UNDEV.)/DESERT= 22.7%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.94; LAG(HR) = 0.75; Fm(INCH/HR) = 0.47; Ybar = 0.48
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.60; 30M = 0.62; 1HR = 0.63;
  3HR = 0.92; 6HR = 0.96; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  14116.89
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21439.00 = 52041.07 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0238; Lca/L=0.4,n=.0213; Lca/L=0.5,n=.0196;Lca/L=0.6,n=.0183
  TIME OF PEAK FLOW(HR) = 16.75  RUNOFF VOLUME(AF) =    3580.60
  PEAK FLOW RATE(CFS) =   7512.60
    (UPSTREAM NODE PEAK FLOW RATE(CFS) =   7521.61)
  PEAK FLOW RATE(CFS) USED =   7521.61

****************************************************************************
  FLOW PROCESS FROM NODE LR021439.0 TO NODE LR021443.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
```



```
  ELEVATION DATA: UPSTREAM(FEET) =   1143.00  DOWNSTREAM(FEET) =   1135.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1468.88   CHANNEL SLOPE =  0.0054
  CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   7521.61
  FLOW VELOCITY(FEET/SEC.) =  22.91   FLOW DEPTH(FEET) =   8.75
  TRAVEL TIME(MIN.) =   1.07   Tc(MIN.) =  57.26
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21443.00 = 53509.95 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021443.0 TO NODE LR021443.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =    7521.61    Tc(MIN.) =  57.26
  AREA-AVERAGED Fm(INCH/HR) =  0.47   Ybar = 0.48
  TOTAL AREA(ACRES) =   14116.89

****************************************************************************
  FLOW PROCESS FROM NODE LR021440.0 TO NODE LR021441.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   665.71
  ELEVATION DATA: UPSTREAM(FEET) =   1142.00  DOWNSTREAM(FEET) =   1138.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.137
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.261
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  MOBILE HOME PARK           B        6.41      0.75       0.25    56   12.59
  PUBLIC PARK                B        0.38      0.75       0.85    56   18.09
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.07      0.75       0.60    56   15.43
  SCHOOL                     B        0.09      0.75       0.60    56   15.43
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B        0.25      0.75       0.20    56   12.14
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.29
  SUBAREA RUNOFF(CFS) =     19.74
  TOTAL AREA(ACRES) =      7.20   PEAK FLOW RATE(CFS) =     19.74

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021441.0 TO NODE LR021442.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1138.00  DOWNSTREAM ELEVATION(FEET) = 1136.00
  STREET LENGTH(FEET) =   701.10   CURB HEIGHT(INCHES) =  6.0
```

```
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      39.29
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.72
    HALFSTREET FLOOD WIDTH(FEET) =   29.12
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.22
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.60
  STREET FLOW TRAVEL TIME(MIN.) =   5.26   Tc(MIN.) =  17.40
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.627
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        1.22      0.75      0.85    56
  MOBILE HOME PARK           B       16.66      0.75      0.25    56
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B        0.05      0.75      0.20    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.29
  SUBAREA AREA(ACRES) =   17.93      SUBAREA RUNOFF(CFS) =   38.89
  EFFECTIVE AREA(ACRES) =     25.13    AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.29
  TOTAL AREA(ACRES) =     25.13        PEAK FLOW RATE(CFS) =      54.52

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.80   HALFSTREET FLOOD WIDTH(FEET) =  33.09
  FLOW VELOCITY(FEET/SEC.) =  2.41   DEPTH*VELOCITY(FT*FT/SEC.) =   1.93
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  701.1 FT WITH ELEVATION-DROP =   2.0 FT, IS   44.0 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21442.00
  LONGEST FLOWPATH FROM NODE  21440.00 TO NODE  21442.00 =  1366.81 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021442.0 TO NODE LR021443.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1136.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1135.00
  FLOW LENGTH(FEET) =   150.38   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  26.6 INCHES
```



```
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.04
  PIPE-FLOW(CFS) =     54.52
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =  17.68
  LONGEST FLOWPATH FROM NODE  21440.00 TO NODE  21443.00 =  1517.19 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021443.0 TO NODE LR021443.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  17.68
  RAINFALL INTENSITY(INCH/HR) =   2.60
  AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.29
  EFFECTIVE STREAM AREA(ACRES) =    25.13
  TOTAL STREAM AREA(ACRES) =    25.13
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     54.52
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1      7521.61   57.26    14116.89  LR020120.0
     2        54.52   17.68       25.13  LR021440.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.91;1H= 1.21;3H= 1.96;6H= 2.68;24H= 5.86
  S-GRAPH: VALLEY(DEV.)= 77.4%;VALLEY(UNDEV.)/DESERT= 22.6%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.95; LAG(HR) = 0.76; Fm(INCH/HR) = 0.47; Ybar = 0.48
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.60; 30M = 0.62; 1HR = 0.63;
  3HR = 0.92; 6HR = 0.96; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  14142.02
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21443.00 = 53509.95 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0236; Lca/L=0.4,n=.0212; Lca/L=0.5,n=.0195;Lca/L=0.6,n=.0182
  TIME OF PEAK FLOW(HR) = 16.83  RUNOFF VOLUME(AF) =    3587.85
  PEAK FLOW RATE(CFS) =   7542.82

****************************************************************************
  FLOW PROCESS FROM NODE LR021443.0 TO NODE LR021453.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1135.00  DOWNSTREAM(FEET) =   1118.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1571.70   CHANNEL SLOPE =  0.0108
  CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   7542.82
  FLOW VELOCITY(FEET/SEC.) =  29.44   FLOW DEPTH(FEET) =   7.37
  TRAVEL TIME(MIN.) =   0.89   Tc(MIN.) =  58.15
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21453.00 = 55081.64 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR021453.0 TO NODE LR021453.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =    7542.82    Tc(MIN.) =  58.15
  AREA-AVERAGED Fm(INCH/HR) =  0.47   Ybar = 0.48
  TOTAL AREA(ACRES) =   14142.02

****************************************************************************
  FLOW PROCESS FROM NODE LR021450.0 TO NODE LR021451.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   526.00
  ELEVATION DATA: UPSTREAM(FEET) =   1132.00  DOWNSTREAM(FEET) =   1128.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.927
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.473
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  MOBILE HOME PARK           B        3.07      0.75       0.25    56   10.93
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.25
  SUBAREA RUNOFF(CFS) =      9.08
  TOTAL AREA(ACRES) =      3.07   PEAK FLOW RATE(CFS) =      9.08

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021451.0 TO NODE LR021452.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1128.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1119.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   853.42
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.909
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.02      0.75       0.90    56
  MOBILE HOME PARK           B       18.33      0.75       0.25    56
  PUBLIC PARK                B        0.30      0.75       0.85    56
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B        0.28      0.75       0.20    56
```



```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.26
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     31.74
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.79
  AVERAGE FLOW DEPTH(FEET) =   0.69   FLOOD WIDTH(FEET) =   42.65
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   3.75   Tc(MIN.) =  14.68
  SUBAREA AREA(ACRES) =   18.93       SUBAREA RUNOFF(CFS) =   46.26
  EFFECTIVE AREA(ACRES) =   22.00     AREA-AVERAGED Fm(INCH/HR) =   0.19
  AREA-AVERAGED Fp(INCH/HR) =   0.75  AREA-AVERAGED Ap =   0.26
  TOTAL AREA(ACRES) =     22.00         PEAK FLOW RATE(CFS) =      53.78

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.78   FLOOD WIDTH(FEET) =   53.56
  FLOW VELOCITY(FEET/SEC.) =   4.19   DEPTH*VELOCITY(FT*FT/SEC) =   3.27
  LONGEST FLOWPATH FROM NODE  21450.00 TO NODE  21452.00 =  1379.42 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021452.0 TO NODE LR021453.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1119.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1118.00
  FLOW LENGTH(FEET) =   197.38   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  USER SPECIFIED PIPE SYSTEM UNDER PRESSURE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.19
  PIPE-FLOW(CFS) =     43.77
  PIPEFLOW TRAVEL TIME(MIN.) =   0.53    Tc(MIN.) =  15.21
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.848
  SUBAREA AREA(ACRES) =    0.00      SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =     22.00    AREA-AVERAGED Fm(INCH/HR) =  0.19
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.26
  TOTAL AREA(ACRES) =     22.00        PEAK FLOW RATE(CFS) =     53.78
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 2.96

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  6.0       STREET HALFWIDTH(FEET) = 18.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   10.01
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.45
```

```
    HALFSTREET FLOOD WIDTH(FEET) =   16.40
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.78
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.81
  LONGEST FLOWPATH FROM NODE  21450.00 TO NODE  21453.00 =  1576.80 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021453.0 TO NODE LR021453.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.21
  RAINFALL INTENSITY(INCH/HR) =   2.85
  AREA-AVERAGED Fm(INCH/HR) =  0.19
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.26
  EFFECTIVE STREAM AREA(ACRES) =    22.00
  TOTAL STREAM AREA(ACRES) =    22.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     53.78
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1      7542.82   58.15    14142.02  LR020120.0
     2        53.78   15.21       22.00  LR021450.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.91;1H= 1.21;3H= 1.96;6H= 2.68;24H= 5.86
  S-GRAPH: VALLEY(DEV.)= 77.4%;VALLEY(UNDEV.)/DESERT= 22.6%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.97; LAG(HR) = 0.78; Fm(INCH/HR) = 0.47; Ybar = 0.48
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.60; 30M = 0.62; 1HR = 0.63;
  3HR = 0.92; 6HR = 0.96; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  14164.02
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21453.00 = 55081.64 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0234; Lca/L=0.4,n=.0210; Lca/L=0.5,n=.0193;Lca/L=0.6,n=.0180
  TIME OF PEAK FLOW(HR) = 16.83  RUNOFF VOLUME(AF) =    3594.42
  PEAK FLOW RATE(CFS) =   7555.38

****************************************************************************
  FLOW PROCESS FROM NODE LR021453.0 TO NODE LR021469.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1118.00  DOWNSTREAM(FEET) =   1117.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   519.47   CHANNEL SLOPE =  0.0019
  CHANNEL BASE(FEET) =   22.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =  11.50
  CHANNEL FLOW THRU SUBAREA(CFS) =   7555.38
  FLOW VELOCITY(FEET/SEC.) =  15.60   FLOW DEPTH(FEET) =  11.00
  TRAVEL TIME(MIN.) =   0.55   Tc(MIN.) =  58.70
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21469.00 = 55601.11 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR021469.0 TO NODE LR021469.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =    7555.38    Tc(MIN.) =  58.70
  AREA-AVERAGED Fm(INCH/HR) =  0.47   Ybar = 0.48
  TOTAL AREA(ACRES) =   14164.02

****************************************************************************
  FLOW PROCESS FROM NODE LR021460.0 TO NODE LR021461.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   626.73
  ELEVATION DATA: UPSTREAM(FEET) =   1222.00  DOWNSTREAM(FEET) =   1219.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.633
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.345
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.48      0.75      0.60    56   15.77
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        5.98      0.75      0.50    56   14.89
  COMMERCIAL                 B        1.53      0.75      0.10    56   11.63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.46
  SUBAREA RUNOFF(CFS) =     26.96
  TOTAL AREA(ACRES) =      9.99   PEAK FLOW RATE(CFS) =     26.96

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021461.0 TO NODE LR021462.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1219.00  DOWNSTREAM ELEVATION(FEET) = 1216.00
  STREET LENGTH(FEET) =   478.63   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90
```

```
  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      34.54
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.62
  HALFSTREET FLOOD WIDTH(FEET) =   23.81
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.86
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.76
 STREET FLOW TRAVEL TIME(MIN.) =   2.79   Tc(MIN.) =  14.42
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.940
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        6.46      0.75      0.50    56
 COMMERCIAL                 B        0.09      0.75      0.10    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.49
 SUBAREA AREA(ACRES) =    6.55      SUBAREA RUNOFF(CFS) =   15.15
 EFFECTIVE AREA(ACRES) =     16.54    AREA-AVERAGED Fm(INCH/HR) =  0.36
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.48
 TOTAL AREA(ACRES) =     16.54        PEAK FLOW RATE(CFS) =      38.47

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.02; 6HR = 2.73; 24HR = 4.75

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.64   HALFSTREET FLOOD WIDTH(FEET) =  24.79
 FLOW VELOCITY(FEET/SEC.) =  2.95   DEPTH*VELOCITY(FT*FT/SEC.) =   1.88
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  478.6 FT WITH ELEVATION-DROP =   3.0 FT, IS   19.5 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21462.00
 LONGEST FLOWPATH FROM NODE  21460.00 TO NODE  21462.00 =  1105.36 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021462.0 TO NODE LR021463.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1216.00  DOWNSTREAM(FEET) =   1211.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   268.66   CHANNEL SLOPE =  0.0186
 CHANNEL BASE(FEET) =    2.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   4.50
 CHANNEL FLOW THRU SUBAREA(CFS) =     38.47
 FLOW VELOCITY(FEET/SEC.) =   9.78   FLOW DEPTH(FEET) =   0.99
 TRAVEL TIME(MIN.) =   0.46   Tc(MIN.) =  14.88
 LONGEST FLOWPATH FROM NODE  21460.00 TO NODE  21463.00 =  1374.02 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021463.0 TO NODE LR021463.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  14.88
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.886
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```



```
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.34      0.75      0.60    56
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        8.08      0.75      0.50    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =    8.42      SUBAREA RUNOFF(CFS) =   19.01
 EFFECTIVE AREA(ACRES) =     24.96   AREA-AVERAGED Fm(INCH/HR) =  0.36
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.49
 TOTAL AREA(ACRES) =     24.96       PEAK FLOW RATE(CFS) =      56.67

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.99; 6HR = 2.67; 24HR = 4.75

****************************************************************************
 FLOW PROCESS FROM NODE LR021463.0 TO NODE LR021464.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1211.00  DOWNSTREAM(FEET) =   1205.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   384.00   CHANNEL SLOPE =  0.0156
 CHANNEL BASE(FEET) =    2.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   4.50
 CHANNEL FLOW THRU SUBAREA(CFS) =     56.67
 FLOW VELOCITY(FEET/SEC.) =  10.12   FLOW DEPTH(FEET) =   1.25
 TRAVEL TIME(MIN.) =   0.63   Tc(MIN.) =  15.51
 LONGEST FLOWPATH FROM NODE  21460.00 TO NODE  21464.00 =  1758.02 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021464.0 TO NODE LR021464.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  15.51
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.815
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        6.76      0.75      0.50    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =    6.76      SUBAREA RUNOFF(CFS) =   14.85
 EFFECTIVE AREA(ACRES) =     31.72   AREA-AVERAGED Fm(INCH/HR) =  0.37
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.49
 TOTAL AREA(ACRES) =     31.72       PEAK FLOW RATE(CFS) =      69.92

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.89; 6HR = 2.45; 24HR = 4.75

****************************************************************************
 FLOW PROCESS FROM NODE LR021464.0 TO NODE LR021465.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
```

```
  ELEVATION DATA: UPSTREAM(FEET) =   1205.00  DOWNSTREAM(FEET) =   1197.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   540.00   CHANNEL SLOPE =  0.0148
  CHANNEL BASE(FEET) =    2.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   4.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     69.92
  FLOW VELOCITY(FEET/SEC.) =  10.48   FLOW DEPTH(FEET) =   1.39
  TRAVEL TIME(MIN.) =   0.86   Tc(MIN.) =  16.37
  LONGEST FLOWPATH FROM NODE  21460.00 TO NODE  21465.00 =  2298.02 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021465.0 TO NODE LR021465.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  16.37
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.725
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.08      0.75      0.10    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        7.60      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =    7.68      SUBAREA RUNOFF(CFS) =   16.27
  EFFECTIVE AREA(ACRES) =     39.40   AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.49
  TOTAL AREA(ACRES) =     39.40       PEAK FLOW RATE(CFS) =      83.64

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.26; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021465.0 TO NODE LR021466.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1197.00  DOWNSTREAM(FEET) =   1187.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   678.50   CHANNEL SLOPE =  0.0147
  CHANNEL BASE(FEET) =    2.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   4.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     83.64
  FLOW VELOCITY(FEET/SEC.) =  10.97   FLOW DEPTH(FEET) =   1.52
  TRAVEL TIME(MIN.) =   1.03   Tc(MIN.) =  17.40
  LONGEST FLOWPATH FROM NODE  21460.00 TO NODE  21466.00 =  2976.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021466.0 TO NODE LR021466.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.40
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.627
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.26      0.75      0.10    56
```



```
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        8.00      0.75      0.50    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.11      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.49
  SUBAREA AREA(ACRES) =    8.37      SUBAREA RUNOFF(CFS) =   17.03
  EFFECTIVE AREA(ACRES) =     47.77   AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.49
  TOTAL AREA(ACRES) =     47.77       PEAK FLOW RATE(CFS) =      97.19

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021466.0 TO NODE LR021467.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1187.00  DOWNSTREAM(FEET) =   1170.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1180.01   CHANNEL SLOPE =  0.0144
  CHANNEL BASE(FEET) =    2.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   4.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     97.19
  FLOW VELOCITY(FEET/SEC.) =  11.27   FLOW DEPTH(FEET) =   1.64
  TRAVEL TIME(MIN.) =   1.74   Tc(MIN.) =  19.14
  LONGEST FLOWPATH FROM NODE  21460.00 TO NODE  21467.00 =  4156.53 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021467.0 TO NODE LR021467.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  19.14
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.481
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        7.62      0.75      0.50    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        1.76      0.63      1.00    65
  COMMERCIAL                 B        2.13      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.15      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.71
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =   11.66      SUBAREA RUNOFF(CFS) =   22.27
  EFFECTIVE AREA(ACRES) =     59.43   AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.49
  TOTAL AREA(ACRES) =     59.43       PEAK FLOW RATE(CFS) =     113.17

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021467.0 TO NODE LR021468.0 IS CODE =  54
```

```
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1170.00  DOWNSTREAM(FEET) =   1156.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1415.51   CHANNEL SLOPE =  0.0099
  CHANNEL BASE(FEET) =    2.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   4.50
  CHANNEL FLOW THRU SUBAREA(CFS) =    113.17
  FLOW VELOCITY(FEET/SEC.) =  10.18   FLOW DEPTH(FEET) =   1.91
  TRAVEL TIME(MIN.) =   2.32   Tc(MIN.) =  21.46
  LONGEST FLOWPATH FROM NODE  21460.00 TO NODE  21468.00 =  5572.04 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021468.0 TO NODE LR021468.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.46
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.316
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.73      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.64      0.75      0.60    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B       11.78      0.75      0.50    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        2.68      0.63      1.00    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.71
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.57
  SUBAREA AREA(ACRES) =   15.83      SUBAREA RUNOFF(CFS) =   27.21
  EFFECTIVE AREA(ACRES) =     75.26   AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.51
  TOTAL AREA(ACRES) =     75.26       PEAK FLOW RATE(CFS) =     131.58

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021468.0 TO NODE LR021469.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1156.00  DOWNSTREAM(FEET) =   1117.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3195.53   CHANNEL SLOPE =  0.0122
  CHANNEL BASE(FEET) =    2.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   4.50
  CHANNEL FLOW THRU SUBAREA(CFS) =    131.58
  FLOW VELOCITY(FEET/SEC.) =  11.45   FLOW DEPTH(FEET) =   1.95
  TRAVEL TIME(MIN.) =   4.65   Tc(MIN.) =  26.11
  LONGEST FLOWPATH FROM NODE  21460.00 TO NODE  21469.00 =  8767.57 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021469.0 TO NODE LR021469.0 IS CODE =  81
----------------------------------------------------------------------------
```



```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  26.11
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.059
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        8.14      0.75      0.10    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        7.28      0.63      1.00    65
  PUBLIC PARK                B        6.06      0.75      0.85    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        3.35      0.75      0.50    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.97      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.23      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   26.03      SUBAREA RUNOFF(CFS) =   38.44
  EFFECTIVE AREA(ACRES) =    101.29   AREA-AVERAGED Fm(INCH/HR) =  0.39
  AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.53
  TOTAL AREA(ACRES) =    101.29       PEAK FLOW RATE(CFS) =     152.60

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021469.0 TO NODE LR021469.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  26.11
  RAINFALL INTENSITY(INCH/HR) =   2.06
  AREA-AVERAGED Fm(INCH/HR) =  0.39
  AREA-AVERAGED Fp(INCH/HR) =  0.72
  AREA-AVERAGED Ap =  0.53
  EFFECTIVE STREAM AREA(ACRES) =   101.29
  TOTAL STREAM AREA(ACRES) =   101.29
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    152.60
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1     7555.38   58.70    14164.02  LR020120.0
     2      152.60   26.11      101.29  LR021460.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.91;1H= 1.21;3H= 1.96;6H= 2.68;24H= 5.85
  S-GRAPH: VALLEY(DEV.)= 77.5%;VALLEY(UNDEV.)/DESERT= 22.5%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.98; LAG(HR) = 0.78; Fm(INCH/HR) = 0.47; Ybar = 0.48
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.60; 30M = 0.62; 1HR = 0.63;
  3HR = 0.92; 6HR = 0.96; 24HR= 0.98
```

```
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  14265.31
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21469.00 = 55601.11 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0234; Lca/L=0.4,n=.0210; Lca/L=0.5,n=.0193;Lca/L=0.6,n=.0180
  TIME OF PEAK FLOW(HR) = 16.83  RUNOFF VOLUME(AF) =    3616.25
  PEAK FLOW RATE(CFS) =   7576.34

****************************************************************************
  FLOW PROCESS FROM NODE LR021469.0 TO NODE LR021470.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1117.00  DOWNSTREAM(FEET) =   1110.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   370.28   CHANNEL SLOPE =  0.0189
  CHANNEL BASE(FEET) =   22.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =  11.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   7576.34
  FLOW VELOCITY(FEET/SEC.) =  35.84   FLOW DEPTH(FEET) =   6.16
  TRAVEL TIME(MIN.) =   0.17   Tc(MIN.) =  58.87
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21470.00 = 55971.39 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021470.0 TO NODE LR021470.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  58.87
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.264
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B       17.62      0.75      0.50    56
  COMMERCIAL                 B        0.37      0.75      0.10    56
  PUBLIC PARK                B        0.37      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =   18.36
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.91;1H= 1.21;3H= 1.96;6H= 2.68;24H= 5.85
  S-GRAPH: VALLEY(DEV.)= 77.5%;VALLEY(UNDEV.)/DESERT= 22.5%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.98; LAG(HR) = 0.78; Fm(INCH/HR) = 0.47; Ybar = 0.48
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.60; 30M = 0.62; 1HR = 0.63;
  3HR = 0.92; 6HR = 0.96; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  14283.67
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21470.00 = 55971.39 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0233; Lca/L=0.4,n=.0209; Lca/L=0.5,n=.0192;Lca/L=0.6,n=.0179
  TIME OF PEAK FLOW(HR) = 16.83  RUNOFF VOLUME(AF) =    3620.28
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   7575.35
  TOTAL AREA(ACRES) =  14283.67       PEAK FLOW RATE(CFS) =    7576.34
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR021470.0 TO NODE LR021470.0 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 21470.dna
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =  14283.67  TC(MIN.) =     58.87
  AREA-AVERAGED Fm(INCH/HR)=  0.47   Ybar =  0.48
  PEAK FLOW RATE(CFS)   =   7576.34
============================================================================
============================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

```
************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                           County of San Bernardino
                         Transportation Flood Control

                           Water Resources Division

------------------------------------------------------------------------
  FILE NAME: LR0215ZZ.Z13
  TIME/DATE OF STUDY: 09:35 11/08/2004
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.2500

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  =================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
```



```
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


************************************************************************
  FLOW PROCESS FROM NODE LR021500.0 TO NODE LR021501.0 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   886.72
  ELEVATION DATA: UPSTREAM(FEET) =   1129.00  DOWNSTREAM(FEET) =   1127.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.536
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.812
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 B        9.85      0.75       0.10    56   15.54
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.49      0.75       0.50    56   19.88
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.12
  SUBAREA RUNOFF(CFS) =     25.34
  TOTAL AREA(ACRES) =     10.34   PEAK FLOW RATE(CFS) =     25.34

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

************************************************************************
  FLOW PROCESS FROM NODE LR021501.0 TO NODE LR021502.0 IS CODE =  92
------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
========================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1127.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1123.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   598.48
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.524
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
```

```
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL               B        9.33      0.75      0.10    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"     B        0.97      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.14
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     36.56
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.25
  AVERAGE FLOW DEPTH(FEET) =   0.75   FLOOD WIDTH(FEET) =   49.97
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   3.07   Tc(MIN.) =  18.60
  SUBAREA AREA(ACRES) =   10.30       SUBAREA RUNOFF(CFS) =   22.44
  EFFECTIVE AREA(ACRES) =   20.64     AREA-AVERAGED Fm(INCH/HR) =   0.10
  AREA-AVERAGED Fp(INCH/HR) =   0.75  AREA-AVERAGED Ap =   0.13
  TOTAL AREA(ACRES) =     20.64         PEAK FLOW RATE(CFS) =      45.10

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.79   FLOOD WIDTH(FEET) =   54.60
  FLOW VELOCITY(FEET/SEC.) =   3.39   DEPTH*VELOCITY(FT*FT/SEC) =   2.67
  LONGEST FLOWPATH FROM NODE  21500.00 TO NODE  21502.00 =  1485.20 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021502.0 TO NODE LR021512.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1123.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1109.00
  FLOW LENGTH(FEET) =  1064.46   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  18.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.26
  PIPE-FLOW(CFS) =     45.10
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.58    Tc(MIN.) =  20.18
  LONGEST FLOWPATH FROM NODE  21500.00 TO NODE  21512.00 =  2549.66 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021512.0 TO NODE LR021512.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  20.18
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.403
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL               B       14.82      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"     B        1.64      0.75      0.60    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"     B        1.91      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.19
```



```
  SUBAREA AREA(ACRES) =   18.37      SUBAREA RUNOFF(CFS) =   37.43
  EFFECTIVE AREA(ACRES) =     39.01   AREA-AVERAGED Fm(INCH/HR) =  0.12
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.16
  TOTAL AREA(ACRES) =     39.01       PEAK FLOW RATE(CFS) =      80.30

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021512.0 TO NODE LR021512.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  20.18
  RAINFALL INTENSITY(INCH/HR) =   2.40
  AREA-AVERAGED Fm(INCH/HR) =  0.12
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.16
  EFFECTIVE STREAM AREA(ACRES) =    39.01
  TOTAL STREAM AREA(ACRES) =    39.01
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     80.30

****************************************************************************
  FLOW PROCESS FROM NODE LR021510.0 TO NODE LR021511.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   793.57
  ELEVATION DATA: UPSTREAM(FEET) =   1111.00  DOWNSTREAM(FEET) =   1110.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   16.696
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.693
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL               B        9.83      0.75      0.10    56   16.70
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
  SUBAREA RUNOFF(CFS) =     23.16
  TOTAL AREA(ACRES) =      9.83   PEAK FLOW RATE(CFS) =     23.16

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021511.0 TO NODE LR021512.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1110.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1109.00
  FLOW LENGTH(FEET) =   221.35   MANNING'S N =  0.013
```

```
  USER SPECIFIED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  18.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.39
  PIPE-FLOW(CFS) =     23.16
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.58    Tc(MIN.) =  17.27
  LONGEST FLOWPATH FROM NODE  21510.00 TO NODE  21512.00 =  1014.92 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021512.0 TO NODE LR021512.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  17.27
  RAINFALL INTENSITY(INCH/HR) =   2.64
  AREA-AVERAGED Fm(INCH/HR) =  0.07
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.10
  EFFECTIVE STREAM AREA(ACRES) =     9.83
  TOTAL STREAM AREA(ACRES) =     9.83
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     23.16

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1     80.30  20.18    2.403  0.75( 0.12) 0.16    39.0 LR021500.0
      2     23.16  17.27    2.639  0.75( 0.07) 0.10     9.8 LR021510.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1     98.96  17.27    2.639  0.75( 0.11) 0.14    43.2 LR021510.0
      2    101.34  20.18    2.403  0.75( 0.11) 0.14    48.8 LR021500.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    101.34    Tc(MIN.) =    20.18
  EFFECTIVE AREA(ACRES) =    48.84   AREA-AVERAGED Fm(INCH/HR) =  0.11
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.14
  TOTAL AREA(ACRES) =     48.84
  LONGEST FLOWPATH FROM NODE  21500.00 TO NODE  21512.00 =  2549.66 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021512.0 TO NODE LR021513.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1109.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1104.00
  FLOW LENGTH(FEET) =   128.97   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
```



```
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  23.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.50
  PIPE-FLOW(CFS) =    101.34
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =  20.29
  LONGEST FLOWPATH FROM NODE  21500.00 TO NODE  21513.00 =  2678.63 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021513.0 TO NODE LR021513.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021470.0 TO NODE LR021470.0 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 21470.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     7576.34    Tc(MIN.) =  58.87
  AREA-AVERAGED Fm(INCH/HR) =  0.47    Ybar = 0.48
  TOTAL AREA(ACRES) =   14283.67
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21470.00 = 55971.39 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021470.0 TO NODE LR021470.0 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     7576.34    Tc(MIN.) =  58.87
  AREA-AVERAGED Fm(INCH/HR) =  0.47    Ybar = 0.48
  TOTAL AREA(ACRES) =   14283.67
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21470.00 = 55971.39 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021470.0 TO NODE LR021470.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021470.0 TO NODE LR021513.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1110.00  DOWNSTREAM(FEET) =   1104.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   186.42   CHANNEL SLOPE =  0.0322
  CHANNEL BASE(FEET) =   22.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =  11.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   7576.34
  FLOW VELOCITY(FEET/SEC.) =  43.36   FLOW DEPTH(FEET) =   5.35
  TRAVEL TIME(MIN.) =   0.07   Tc(MIN.) =  58.95
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21513.00 = 56157.82 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR021513.0 TO NODE LR021513.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  58.95
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.263
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       11.80      0.75      0.10    56
  PUBLIC PARK                B        1.02      0.75      0.85    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.70      0.75      0.50    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.46      0.75      0.90    56
  MOBILE HOME PARK           B        0.08      0.75      0.25    56
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B        0.03      0.75      0.20    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.20
  SUBAREA AREA(ACRES) =   14.09
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.91;1H= 1.21;3H= 1.96;6H= 2.67;24H= 5.85
  S-GRAPH: VALLEY(DEV.)= 77.5%;VALLEY(UNDEV.)/DESERT= 22.5%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.98; LAG(HR) = 0.79; Fm(INCH/HR) = 0.47; Ybar = 0.48
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.60; 30M = 0.62; 1HR = 0.63;
  3HR = 0.92; 6HR = 0.96; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  14297.76
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21513.00 = 56157.82 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0233; Lca/L=0.4,n=.0209; Lca/L=0.5,n=.0192;Lca/L=0.6,n=.0179
  TIME OF PEAK FLOW(HR) = 16.83  RUNOFF VOLUME(AF) =    3624.75
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   7579.13
  TOTAL AREA(ACRES) =  14297.76       PEAK FLOW RATE(CFS) =    7579.13

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021513.0 TO NODE LR021513.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     7579.13    Tc(MIN.) =  58.95
  AREA-AVERAGED Fm(INCH/HR) =  0.47    Ybar = 0.48
  TOTAL AREA(ACRES) =   14297.76
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21513.00 = 56157.82 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     98.96  17.39    2.628  0.75( 0.11) 0.14    43.2 LR021510.0
      2    101.34  20.29    2.395  0.75( 0.11) 0.14    48.8 LR021500.0
```



```
  LONGEST FLOWPATH FROM NODE  21500.00 TO NODE  21513.00 =  2678.63 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.91;1H= 1.21;3H= 1.96;6H= 2.67;24H= 5.85
  S-GRAPH: VALLEY(DEV.)= 77.6%;VALLEY(UNDEV.)/DESERT= 22.4%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.98; LAG(HR) = 0.79; Fm(INCH/HR) = 0.47; Ybar = 0.48
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.60; 30M = 0.62; 1HR = 0.63;
  3HR = 0.92; 6HR = 0.96; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  14346.60
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21513.00 = 56157.82 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0233; Lca/L=0.4,n=.0209; Lca/L=0.5,n=.0192;Lca/L=0.6,n=.0179
  TIME OF PEAK FLOW(HR) = 16.83  RUNOFF VOLUME(AF) =    3641.13
  PEAK FLOW RATE(CFS) =    7607.16

****************************************************************************
  FLOW PROCESS FROM NODE LR021513.0 TO NODE LR021513.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021513.0 TO NODE LR021532.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1104.00  DOWNSTREAM(FEET) =   1081.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1794.30   CHANNEL SLOPE =  0.0128
  CHANNEL BASE(FEET) =   22.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =  11.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   7607.16
  FLOW VELOCITY(FEET/SEC.) =  31.21   FLOW DEPTH(FEET) =   6.83
  TRAVEL TIME(MIN.) =   0.96   Tc(MIN.) =  59.90
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21532.00 = 57952.12 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021532.0 TO NODE LR021532.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  59.90
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.251
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.05      0.75      0.60    56
  PUBLIC PARK                B        3.40      0.75      0.85    56
  COMMERCIAL                 B        2.34      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.54
  SUBAREA AREA(ACRES) =    5.79
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.91;1H= 1.21;3H= 1.96;6H= 2.67;24H= 5.85
```

```
  S-GRAPH: VALLEY(DEV.)= 77.6%;VALLEY(UNDEV.)/DESERT= 22.4%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 1.00; LAG(HR) = 0.80; Fm(INCH/HR) = 0.47; Ybar = 0.48
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.60; 30M = 0.62; 1HR = 0.63;
  3HR = 0.92; 6HR = 0.96; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  14352.39
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21532.00 = 57952.12 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0230; Lca/L=0.4,n=.0206; Lca/L=0.5,n=.0190;Lca/L=0.6,n=.0177
  TIME OF PEAK FLOW(HR) = 16.83  RUNOFF VOLUME(AF) =    3642.31
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   7542.91
  TOTAL AREA(ACRES) =  14352.39       PEAK FLOW RATE(CFS) =    7607.16
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021532.0 TO NODE LR021532.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =    7607.16    Tc(MIN.) =  59.90
  AREA-AVERAGED Fm(INCH/HR) =  0.47   Ybar = 0.48
  TOTAL AREA(ACRES) =   14352.39

****************************************************************************
  FLOW PROCESS FROM NODE LR021520.0 TO NODE LR021521.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1080.64
  ELEVATION DATA: UPSTREAM(FEET) =   1265.00  DOWNSTREAM(FEET) =   1233.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.857
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.150
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        5.26      0.75      0.50    56   12.86
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        3.93      0.98      0.50    32   12.86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.85
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA RUNOFF(CFS) =     22.56
  TOTAL AREA(ACRES) =      9.19   PEAK FLOW RATE(CFS) =     22.56

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

****************************************************************************
  FLOW PROCESS FROM NODE LR021521.0 TO NODE LR021522.0 IS CODE =  63
```



```
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1233.00  DOWNSTREAM ELEVATION(FEET) = 1230.00
  STREET LENGTH(FEET) =   334.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      36.27
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.64
    HALFSTREET FLOOD WIDTH(FEET) =   24.07
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.03
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.94
  STREET FLOW TRAVEL TIME(MIN.) =   1.84   Tc(MIN.) =  14.69
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.908
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B       10.25      0.75      0.50    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.13      0.75      0.60    56
  COMMERCIAL                 B        0.15      0.75      0.10    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        1.54      0.98      0.50    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.78
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =   12.07      SUBAREA RUNOFF(CFS) =   27.40
  EFFECTIVE AREA(ACRES) =     21.26    AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.81  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =     21.26        PEAK FLOW RATE(CFS) =      47.95

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.69   HALFSTREET FLOOD WIDTH(FEET) =  28.19
  FLOW VELOCITY(FEET/SEC.) =  3.24   DEPTH*VELOCITY(FT*FT/SEC.) =   2.25
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  334.0 FT WITH ELEVATION-DROP =   3.0 FT, IS   41.4 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21522.00
  LONGEST FLOWPATH FROM NODE  21520.00 TO NODE  21522.00 =  1414.64 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021522.0 TO NODE LR021523.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) = 1230.00  DOWNSTREAM ELEVATION(FEET) = 1222.00
  STREET LENGTH(FEET) =   682.54   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      73.96
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.76
    HALFSTREET FLOOD WIDTH(FEET) =   34.60
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.93
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.98
  STREET FLOW TRAVEL TIME(MIN.) =   2.89   Tc(MIN.) =  17.59
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.610
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                  B       15.29      0.75      0.10    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"        B        6.80      0.75      0.50    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        1.57      0.75      0.60    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"        A        0.20      0.98      0.50    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.25
  SUBAREA AREA(ACRES) =   23.86      SUBAREA RUNOFF(CFS) =   52.01
  EFFECTIVE AREA(ACRES) =     45.12    AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.79  AREA-AVERAGED Ap =  0.37
  TOTAL AREA(ACRES) =     45.12        PEAK FLOW RATE(CFS) =      94.28

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.81   HALFSTREET FLOOD WIDTH(FEET) =  39.22
  FLOW VELOCITY(FEET/SEC.) =  4.15   DEPTH*VELOCITY(FT*FT/SEC.) =   3.37
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  682.5 FT WITH ELEVATION-DROP =   8.0 FT, IS   74.3 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21523.00
  LONGEST FLOWPATH FROM NODE  21520.00 TO NODE  21523.00 =  2097.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021523.0 TO NODE LR021524.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
================================================================================
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  UPSTREAM ELEVATION(FEET) = 1222.00  DOWNSTREAM ELEVATION(FEET) = 1216.00
  STREET LENGTH(FEET) =  1343.02   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     136.65
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.02
    HALFSTREET FLOOD WIDTH(FEET) =   49.60
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.32
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.38
  STREET FLOW TRAVEL TIME(MIN.) =   6.74   Tc(MIN.) =  24.33
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.149
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        6.71      0.75      0.60    56
  COMMERCIAL                  B       37.61      0.75      0.10    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"        B        2.57      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.19
  SUBAREA AREA(ACRES) =   46.89      SUBAREA RUNOFF(CFS) =   84.56
  EFFECTIVE AREA(ACRES) =     92.01    AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.77  AREA-AVERAGED Ap =  0.28
  TOTAL AREA(ACRES) =     92.01        PEAK FLOW RATE(CFS) =     160.09

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.34

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.07   HALFSTREET FLOOD WIDTH(FEET) =  52.04
  FLOW VELOCITY(FEET/SEC.) =  3.47   DEPTH*VELOCITY(FT*FT/SEC.) =   3.71

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 1.07
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.43
  PIPE-FLOW(CFS) =     13.94
  PIPEFLOW TRAVEL TIME(MIN.) =   5.05    Tc(MIN.) =  22.64
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.243
  SUBAREA AREA(ACRES) =   46.89      SUBAREA RUNOFF(CFS) =   88.57
  TOTAL AREA(ACRES) =     92.01        PEAK FLOW RATE(CFS) =    167.95
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  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 5.34
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  154.01
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.06
    HALFSTREET FLOOD WIDTH(FEET) =   51.43
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.43
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.62
  LONGEST FLOWPATH FROM NODE  21520.00 TO NODE  21524.00 =  3440.20 FEET.

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  FLOW PROCESS FROM NODE LR021524.0 TO NODE LR021525.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1216.00  DOWNSTREAM ELEVATION(FEET) = 1192.00
  STREET LENGTH(FEET) =  1371.67   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     215.91
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.96
    HALFSTREET FLOOD WIDTH(FEET) =   46.42
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.16
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.88
  STREET FLOW TRAVEL TIME(MIN.) =   3.71   Tc(MIN.) =  26.35
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.048
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       42.84      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        8.01      0.75      0.60    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        5.50      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.21
  SUBAREA AREA(ACRES) =   56.35      SUBAREA RUNOFF(CFS) =   95.90
  EFFECTIVE AREA(ACRES) =    148.36    AREA-AVERAGED Fm(INCH/HR) =  0.19
  AREA-AVERAGED Fp(INCH/HR) =  0.77  AREA-AVERAGED Ap =  0.25
  TOTAL AREA(ACRES) =    148.36        PEAK FLOW RATE(CFS) =     247.67

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.28; 6HR = 1.67; 24HR = 3.08
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  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.99   HALFSTREET FLOOD WIDTH(FEET) =  48.31
  FLOW VELOCITY(FEET/SEC.) =  6.41   DEPTH*VELOCITY(FT*FT/SEC.) =   6.36

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.87
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.74
  PIPE-FLOW(CFS) =    122.70
  PIPEFLOW TRAVEL TIME(MIN.) =   1.79    Tc(MIN.) =  24.43
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.143
  SUBAREA AREA(ACRES) =   56.35      SUBAREA RUNOFF(CFS) =  100.72
  TOTAL AREA(ACRES) =    148.36        PEAK FLOW RATE(CFS) =    260.36

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.28; 6HR = 1.67; 24HR = 3.08
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  137.66
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.85
    HALFSTREET FLOOD WIDTH(FEET) =   41.05
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.36
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.55
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  1371.7 FT WITH ELEVATION-DROP =  24.0 FT, IS  156.3 CFS,
         WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  21525.00
  LONGEST FLOWPATH FROM NODE  21520.00 TO NODE  21525.00 =  4811.87 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021525.0 TO NODE LR021526.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1192.00  DOWNSTREAM ELEVATION(FEET) = 1173.00
  STREET LENGTH(FEET) =  1371.67   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     307.23
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.10
    HALFSTREET FLOOD WIDTH(FEET) =   53.44
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  AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.26
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.86
STREET FLOW TRAVEL TIME(MIN.) =   3.65   Tc(MIN.) =  28.08
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.971
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
COMMERCIAL                 B       47.24      0.75      0.10    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        9.37      0.75      0.60    56
RESIDENTIAL
"5-7 DWELLINGS/ACRE"       B        0.16      0.75      0.50    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.18
SUBAREA AREA(ACRES) =   56.77      SUBAREA RUNOFF(CFS) =   93.70
EFFECTIVE AREA(ACRES) =    205.13    AREA-AVERAGED Fm(INCH/HR) =  0.18
AREA-AVERAGED Fp(INCH/HR) =  0.76  AREA-AVERAGED Ap =  0.23
TOTAL AREA(ACRES) =    205.13        PEAK FLOW RATE(CFS) =     331.11

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 3.08

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.12   HALFSTREET FLOOD WIDTH(FEET) =  54.72
FLOW VELOCITY(FEET/SEC.) =  6.39   DEPTH*VELOCITY(FT*FT/SEC.) =   7.16

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.87
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  13.90
PIPE-FLOW(CFS) =    246.51
PIPEFLOW TRAVEL TIME(MIN.) =   1.64    Tc(MIN.) =  26.07
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.061
SUBAREA AREA(ACRES) =   56.77      SUBAREA RUNOFF(CFS) =   98.28
TOTAL AREA(ACRES) =    205.13        PEAK FLOW RATE(CFS) =    347.67

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 3.08
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  101.16
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.81
  HALFSTREET FLOOD WIDTH(FEET) =   39.10
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.49
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.63
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
       AND L =  1371.7 FT WITH ELEVATION-DROP =  19.0 FT, IS  153.9 CFS,
       WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  21526.00
LONGEST FLOWPATH FROM NODE  21520.00 TO NODE  21526.00 =  6183.54 FEET.

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 FLOW PROCESS FROM NODE LR021526.0 TO NODE LR021527.0 IS CODE =  33
----------------------------------------------------------------------------
 >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
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 >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1173.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1155.00
 FLOW LENGTH(FEET) =  1315.02   MANNING'S N =  0.013

 USER SPECIFIED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
 USER SPECIFIED PIPE SYSTEM UNDER PRESSURE
 PIPE-FLOW VELOCITY(FEET/SEC.) =  13.82
 PIPE-FLOW(CFS) =    245.05
 PIPEFLOW TRAVEL TIME(MIN.) =   1.59    Tc(MIN.) =  27.66
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.989
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 B       49.34      0.75      0.10    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        4.74      0.75      0.60    56
 SCHOOL                     B        0.33      0.75      0.60    56
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        0.53      0.75      0.50    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.15
 SUBAREA AREA(ACRES) =   54.94      SUBAREA RUNOFF(CFS) =   92.81
 EFFECTIVE AREA(ACRES) =    260.07    AREA-AVERAGED Fm(INCH/HR) =  0.16
 AREA-AVERAGED Fp(INCH/HR) =  0.76  AREA-AVERAGED Ap =  0.22
 TOTAL AREA(ACRES) =    260.07        PEAK FLOW RATE(CFS) =    427.24

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 3.08

 STREET CROSS-SECTION INFORMATION:
 CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 32.00
 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 *NOTE: STREET-CAPACITY MAY BE EXCEEDED*
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  182.18
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.94
   HALFSTREET FLOOD WIDTH(FEET) =   45.81
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.37
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.06

 *DEFICIENCY ANALYSIS(BASED ON REPLACEMENT SYSTEM HYDROLOGY):
 *REPLACEMENT PIPE SYSTEM (MANNING'S N = .0130):
 ESTIMATED PIPE DIAMETER(INCH) =  63.00    NUMBER OF PIPES =   1
 ASSUME FULL-FLOWING PIPELINE
 PIPE-FLOW VELOCITY(FEET/SEC.) =  14.77
 PIPE-FLOW(CFS) =    320.02
 PIPEFLOW TRAVEL TIME(MIN.) =   1.48    Tc(MIN.) =  27.56
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  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.994
  SUBAREA AREA(ACRES) =   54.94      SUBAREA RUNOFF(CFS) =   93.03
  TOTAL AREA(ACRES) =    260.07        PEAK FLOW RATE(CFS) =    428.27
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  108.25
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.82
    HALFSTREET FLOOD WIDTH(FEET) =   39.83
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.57
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.76

  *PARALLEL PIPE SYSTEM (MANNING'S N = .0130):
  PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  1315.0 FT WITH ELEVATION-DROP =  18.0 FT, IS  151.5 CFS,
         WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  21527.00
  LONGEST FLOWPATH FROM NODE  21520.00 TO NODE  21527.00 =  7498.56 FEET.

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  FLOW PROCESS FROM NODE LR021527.0 TO NODE LR021528.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1155.00  DOWNSTREAM ELEVATION(FEET) = 1143.00
  STREET LENGTH(FEET) =  1250.52   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     464.78
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.32
    HALFSTREET FLOOD WIDTH(FEET) =   64.86
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.11
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    8.09
  STREET FLOW TRAVEL TIME(MIN.) =   3.41   Tc(MIN.) =  30.97
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.859
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       32.96      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.13      0.75      0.60    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        7.12      0.63      1.00    65
  SCHOOL                     B        4.48      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.70
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  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.33
  SUBAREA AREA(ACRES) =   49.69      SUBAREA RUNOFF(CFS) =   72.99
  EFFECTIVE AREA(ACRES) =    309.76    AREA-AVERAGED Fm(INCH/HR) =  0.17
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.23
  TOTAL AREA(ACRES) =    309.76        PEAK FLOW RATE(CFS) =     469.70

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 3.08

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.33   HALFSTREET FLOOD WIDTH(FEET) =  65.10
  FLOW VELOCITY(FEET/SEC.) =  6.12   DEPTH*VELOCITY(FT*FT/SEC.) =   8.13

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.87
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  72.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.52
  PIPE-FLOW(CFS) =    382.58
  PIPEFLOW TRAVEL TIME(MIN.) =   1.54    Tc(MIN.) =  29.10
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.930
  SUBAREA AREA(ACRES) =   49.69      SUBAREA RUNOFF(CFS) =   76.16
  TOTAL AREA(ACRES) =    309.76        PEAK FLOW RATE(CFS) =    489.43

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 3.08
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  106.85
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.86
    HALFSTREET FLOOD WIDTH(FEET) =   41.54
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.04
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.46
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  1250.5 FT WITH ELEVATION-DROP =  12.0 FT, IS  127.6 CFS,
         WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  21528.00
  LONGEST FLOWPATH FROM NODE  21520.00 TO NODE  21528.00 =  8749.08 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021528.0 TO NODE LR021529.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1143.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1125.00
  FLOW LENGTH(FEET) =  1283.55   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  63.00    NUMBER OF PIPES =   1
  USER SPECIFIED PIPE SYSTEM UNDER PRESSURE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.95
  PIPE-FLOW(CFS) =    323.92
  PIPEFLOW TRAVEL TIME(MIN.) =   1.43    Tc(MIN.) =  30.53
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.875
  SUBAREA LOSS RATE DATA(AMC  II):
```

```
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"        B        1.95      0.75       0.60    56
COMMERCIAL                  B       31.27      0.75       0.10    56
RESIDENTIAL
"5-7 DWELLINGS/ACRE"        B        0.94      0.75       0.50    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.14
SUBAREA AREA(ACRES) =   34.16      SUBAREA RUNOFF(CFS) =   54.43
EFFECTIVE AREA(ACRES) =    343.92    AREA-AVERAGED Fm(INCH/HR) =  0.17
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.22
TOTAL AREA(ACRES) =    343.92        PEAK FLOW RATE(CFS) =    528.59

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 3.08

STREET CROSS-SECTION INFORMATION:
CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 32.00
DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
*NOTE: STREET-CAPACITY MAY BE EXCEEDED*
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  204.67
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.97
  HALFSTREET FLOOD WIDTH(FEET) =   47.22
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.60
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.44

*DEFICIENCY ANALYSIS(BASED ON REPLACEMENT SYSTEM HYDROLOGY):
*REPLACEMENT PIPE SYSTEM (MANNING'S N = .0130):
ESTIMATED PIPE DIAMETER(INCH) =  69.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  15.89
PIPE-FLOW(CFS) =    412.87
PIPEFLOW TRAVEL TIME(MIN.) =   1.35    Tc(MIN.) =  30.45
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.878
SUBAREA AREA(ACRES) =   34.16      SUBAREA RUNOFF(CFS) =   54.53
TOTAL AREA(ACRES) =    343.92        PEAK FLOW RATE(CFS) =    529.56
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  116.69
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.84
  HALFSTREET FLOOD WIDTH(FEET) =   40.44
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.73
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.95

*PARALLEL PIPE SYSTEM (MANNING'S N = .0130):
PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
```



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  LONGEST FLOWPATH FROM NODE  21520.00 TO NODE  21529.00 = 10032.63 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021529.0 TO NODE LR021530.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1125.00  DOWNSTREAM ELEVATION(FEET) = 1113.00
  STREET LENGTH(FEET) =  1241.54   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     541.07
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.39
    HALFSTREET FLOOD WIDTH(FEET) =   68.21
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.36
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    8.85
  STREET FLOW TRAVEL TIME(MIN.) =   3.25   Tc(MIN.) =  33.70
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.767
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                  B       14.30      0.75       0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        1.05      0.75       0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.13
  SUBAREA AREA(ACRES) =   15.35      SUBAREA RUNOFF(CFS) =   23.02
  EFFECTIVE AREA(ACRES) =    359.27    AREA-AVERAGED Fm(INCH/HR) =  0.16
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.22
  TOTAL AREA(ACRES) =    359.27        PEAK FLOW RATE(CFS) =     529.56
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 3.08

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.38   HALFSTREET FLOOD WIDTH(FEET) =  67.66
  FLOW VELOCITY(FEET/SEC.) =  6.34   DEPTH*VELOCITY(FT*FT/SEC.) =   8.75

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.87
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  75.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
```

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  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.94
  PIPE-FLOW(CFS) =    428.12
  PIPEFLOW TRAVEL TIME(MIN.) =   1.48    Tc(MIN.) =  31.93
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.825
  SUBAREA AREA(ACRES) =   15.35      SUBAREA RUNOFF(CFS) =   23.83
  TOTAL AREA(ACRES) =    359.27        PEAK FLOW RATE(CFS) =    537.02

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 3.08
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  108.89
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.86
    HALFSTREET FLOOD WIDTH(FEET) =   41.72
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.07
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.50
  LONGEST FLOWPATH FROM NODE  21520.00 TO NODE  21530.00 = 11274.17 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021530.0 TO NODE LR021531.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1113.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1083.00
  FLOW LENGTH(FEET) =  2334.29   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  66.00    NUMBER OF PIPES =   1
  USER SPECIFIED PIPE SYSTEM UNDER PRESSURE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.76
  PIPE-FLOW(CFS) =    351.06
  PIPEFLOW TRAVEL TIME(MIN.) =   2.64    Tc(MIN.) =  34.57
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.740
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       14.61      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.76      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.15
  SUBAREA AREA(ACRES) =   16.37      SUBAREA RUNOFF(CFS) =   23.94
  EFFECTIVE AREA(ACRES) =    375.64    AREA-AVERAGED Fm(INCH/HR) =  0.16
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.22
  TOTAL AREA(ACRES) =    375.64        PEAK FLOW RATE(CFS) =    537.02
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 3.08

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 32.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
```



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  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  *NOTE: STREET-CAPACITY MAY BE EXCEEDED*
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  185.96
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.96
    HALFSTREET FLOOD WIDTH(FEET) =   46.48
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.29
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.06

  *DEFICIENCY ANALYSIS(BASED ON REPLACEMENT SYSTEM HYDROLOGY):
  *REPLACEMENT PIPE SYSTEM (MANNING'S N = .0130):
  ESTIMATED PIPE DIAMETER(INCH) =  72.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.65
  PIPE-FLOW(CFS) =    442.75
  PIPEFLOW TRAVEL TIME(MIN.) =   2.49    Tc(MIN.) =  34.42
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.745
  SUBAREA AREA(ACRES) =   16.37      SUBAREA RUNOFF(CFS) =   24.01
  TOTAL AREA(ACRES) =    375.64        PEAK FLOW RATE(CFS) =    537.02
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   94.27
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.80
    HALFSTREET FLOOD WIDTH(FEET) =   38.79
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.27
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.43

  *PARALLEL PIPE SYSTEM (MANNING'S N = .0130):
  PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  LONGEST FLOWPATH FROM NODE  21520.00 TO NODE  21531.00 = 13608.46 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021531.0 TO NODE LR021532.0 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1083.00  DOWNSTREAM(FEET) =  1081.00
  FLOW LENGTH(FEET) =   120.16   MANNING'S N =  0.013
  DEPTH OF FLOW IN  75.0 INCH PIPE IS  58.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.84
  ESTIMATED PIPE DIAMETER(INCH) =  75.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    537.02
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =  34.51
  LONGEST FLOWPATH FROM NODE  21520.00 TO NODE  21532.00 = 13728.62 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021532.0 TO NODE LR021532.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
```

```
==========================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  34.51
  RAINFALL INTENSITY(INCH/HR) =   1.74
  AREA-AVERAGED Fm(INCH/HR) =  0.16
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.22
  EFFECTIVE STREAM AREA(ACRES) =   375.64
  TOTAL STREAM AREA(ACRES) =   375.64
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    537.02
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1      7607.16   59.90    14352.39  LR020120.0
     2       537.02   34.51      375.64  LR021520.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.44;30M= 0.91;1H= 1.20;3H= 1.95;6H= 2.65;24H= 5.79
  S-GRAPH: VALLEY(DEV.)= 78.1%;VALLEY(UNDEV.)/DESERT= 21.9%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 1.00; LAG(HR) = 0.80; Fm(INCH/HR) = 0.46; Ybar = 0.48
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.59; 30M = 0.61; 1HR = 0.62;
  3HR = 0.92; 6HR = 0.96; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  14728.03
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21532.00 = 57952.12 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0230; Lca/L=0.4,n=.0206; Lca/L=0.5,n=.0190;Lca/L=0.6,n=.0177
  TIME OF PEAK FLOW(HR) = 16.83  RUNOFF VOLUME(AF) =    3733.88
  PEAK FLOW RATE(CFS) =   7682.27

****************************************************************************
  FLOW PROCESS FROM NODE LR021532.0 TO NODE LR021586.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1081.00  DOWNSTREAM(FEET) =   1079.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   366.28   CHANNEL SLOPE =  0.0055
  CHANNEL BASE(FEET) =   22.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =  11.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   7682.27
  FLOW VELOCITY(FEET/SEC.) =  22.96   FLOW DEPTH(FEET) =   8.56
  TRAVEL TIME(MIN.) =   0.27   Tc(MIN.) =  60.17
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21586.00 = 58318.40 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021586.0 TO NODE LR021586.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021540.0 TO NODE LR021541.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
```



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  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   880.41
  ELEVATION DATA: UPSTREAM(FEET) =   1185.00  DOWNSTREAM(FEET) =   1170.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.339
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.590
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B        2.95      0.75      0.20    56   11.02
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.62      0.75      0.60    56   14.01
  COMMERCIAL                 B        2.95      0.75      0.10    56   10.34
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.32
  SUBAREA RUNOFF(CFS) =     28.70
  TOTAL AREA(ACRES) =      9.52   PEAK FLOW RATE(CFS) =     28.70

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 2.96

****************************************************************************
  FLOW PROCESS FROM NODE LR021541.0 TO NODE LR021542.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1170.00  DOWNSTREAM ELEVATION(FEET) = 1158.00
  STREET LENGTH(FEET) =   697.81   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      46.89
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.58
    HALFSTREET FLOOD WIDTH(FEET) =   22.10
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.46
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.60
  STREET FLOW TRAVEL TIME(MIN.) =   2.60   Tc(MIN.) =  12.94
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.137
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B        4.32      0.75      0.20    56
```

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  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        9.37      0.75      0.60    56
  COMMERCIAL                 B        0.72      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.46
  SUBAREA AREA(ACRES) =   14.41      SUBAREA RUNOFF(CFS) =   36.27
  EFFECTIVE AREA(ACRES) =     23.93    AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.40
  TOTAL AREA(ACRES) =     23.93        PEAK FLOW RATE(CFS) =      61.10

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 2.96

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.63   HALFSTREET FLOOD WIDTH(FEET) =  24.42
  FLOW VELOCITY(FEET/SEC.) =  4.83   DEPTH*VELOCITY(FT*FT/SEC.) =   3.03
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  697.8 FT WITH ELEVATION-DROP =  12.0 FT, IS   44.9 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21542.00
  LONGEST FLOWPATH FROM NODE  21540.00 TO NODE  21542.00 =  1578.22 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021542.0 TO NODE LR021543.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1158.00  DOWNSTREAM ELEVATION(FEET) = 1151.00
  STREET LENGTH(FEET) =   723.86   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      82.25
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.75
    HALFSTREET FLOOD WIDTH(FEET) =   30.59
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.23
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.18
  STREET FLOW TRAVEL TIME(MIN.) =   2.85   Tc(MIN.) =  15.80
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.784
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B        4.85      0.75      0.20    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       13.49      0.75      0.60    56
  COMMERCIAL                 B        0.99      0.75      0.10    56
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  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.47
  SUBAREA AREA(ACRES) =   19.33      SUBAREA RUNOFF(CFS) =   42.27
  EFFECTIVE AREA(ACRES) =     43.26    AREA-AVERAGED Fm(INCH/HR) =  0.32
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.43
  TOTAL AREA(ACRES) =     43.26        PEAK FLOW RATE(CFS) =      95.75

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.79   HALFSTREET FLOOD WIDTH(FEET) =  32.48
  FLOW VELOCITY(FEET/SEC.) =  4.39   DEPTH*VELOCITY(FT*FT/SEC.) =   3.46
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  723.9 FT WITH ELEVATION-DROP =   7.0 FT, IS   55.0 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21543.00
  LONGEST FLOWPATH FROM NODE  21540.00 TO NODE  21543.00 =  2302.08 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021543.0 TO NODE LR021544.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1151.00  DOWNSTREAM ELEVATION(FEET) = 1145.00
  STREET LENGTH(FEET) =   674.52   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     114.30
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.85
    HALFSTREET FLOOD WIDTH(FEET) =   35.41
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.43
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.76
  STREET FLOW TRAVEL TIME(MIN.) =   2.54   Tc(MIN.) =  18.33
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.546
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B        4.49      0.75      0.20    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       14.43      0.75      0.60    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.09      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.51
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  SUBAREA AREA(ACRES) =   19.01      SUBAREA RUNOFF(CFS) =   37.08
  EFFECTIVE AREA(ACRES) =     62.27    AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.46
  TOTAL AREA(ACRES) =     62.27        PEAK FLOW RATE(CFS) =     123.56

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.87   HALFSTREET FLOOD WIDTH(FEET) =  36.51
  FLOW VELOCITY(FEET/SEC.) =  4.51   DEPTH*VELOCITY(FT*FT/SEC.) =   3.93
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  674.5 FT WITH ELEVATION-DROP =   6.0 FT, IS   51.8 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21544.00
  LONGEST FLOWPATH FROM NODE  21540.00 TO NODE  21544.00 =  2976.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021544.0 TO NODE LR021545.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1145.00  DOWNSTREAM ELEVATION(FEET) = 1137.00
  STREET LENGTH(FEET) =   655.20   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     141.37
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.86
    HALFSTREET FLOOD WIDTH(FEET) =   36.20
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.25
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.53
  STREET FLOW TRAVEL TIME(MIN.) =   2.08   Tc(MIN.) =  20.42
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.387
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B        4.55      0.75      0.20    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       15.17      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.51
  SUBAREA AREA(ACRES) =   19.72      SUBAREA RUNOFF(CFS) =   35.62
  EFFECTIVE AREA(ACRES) =     81.99    AREA-AVERAGED Fm(INCH/HR) =  0.35
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.47
  TOTAL AREA(ACRES) =     81.99        PEAK FLOW RATE(CFS) =     150.27
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  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.88   HALFSTREET FLOOD WIDTH(FEET) =  37.06
  FLOW VELOCITY(FEET/SEC.) =  5.33   DEPTH*VELOCITY(FT*FT/SEC.) =   4.70
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  655.2 FT WITH ELEVATION-DROP =   8.0 FT, IS   56.5 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21545.00
  LONGEST FLOWPATH FROM NODE  21540.00 TO NODE  21545.00 =  3631.80 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021545.0 TO NODE LR021546.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1137.00  DOWNSTREAM ELEVATION(FEET) = 1129.00
  STREET LENGTH(FEET) =   662.74   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     168.84
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.92
    HALFSTREET FLOOD WIDTH(FEET) =   38.89
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.45
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.00
  STREET FLOW TRAVEL TIME(MIN.) =   2.03   Tc(MIN.) =  22.44
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.255
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.78      0.75      0.10    56
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B        4.15      0.75      0.20    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       17.07      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.51
  SUBAREA AREA(ACRES) =   22.00      SUBAREA RUNOFF(CFS) =   37.15
  EFFECTIVE AREA(ACRES) =    103.99    AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.48
  TOTAL AREA(ACRES) =    103.99        PEAK FLOW RATE(CFS) =     177.69

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75
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  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.93   HALFSTREET FLOOD WIDTH(FEET) =  39.68
  FLOW VELOCITY(FEET/SEC.) =  5.51   DEPTH*VELOCITY(FT*FT/SEC.) =   5.15

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.29
  PIPE-FLOW(CFS) =     22.91
  PIPEFLOW TRAVEL TIME(MIN.) =   1.52    Tc(MIN.) =  21.93
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.286
  SUBAREA AREA(ACRES) =   22.00      SUBAREA RUNOFF(CFS) =   37.77
  TOTAL AREA(ACRES) =    103.99        PEAK FLOW RATE(CFS) =    180.62

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  157.71
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.90
    HALFSTREET FLOOD WIDTH(FEET) =   37.85
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.37
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.81
  LONGEST FLOWPATH FROM NODE  21540.00 TO NODE  21546.00 =  4294.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021546.0 TO NODE LR021547.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1129.00  DOWNSTREAM ELEVATION(FEET) = 1122.00
  STREET LENGTH(FEET) =   569.28   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     197.67
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.97
    HALFSTREET FLOOD WIDTH(FEET) =   41.27
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.68
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.48
  STREET FLOW TRAVEL TIME(MIN.) =   1.67   Tc(MIN.) =  23.60
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  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.188
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        8.36      0.75       0.10    56
  PUBLIC PARK                B        0.03      0.75       0.85    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       11.59      0.75       0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.39
  SUBAREA AREA(ACRES) =   19.98      SUBAREA RUNOFF(CFS) =   34.08
  EFFECTIVE AREA(ACRES) =    123.97    AREA-AVERAGED Fm(INCH/HR) =  0.35
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.46
  TOTAL AREA(ACRES) =    123.97        PEAK FLOW RATE(CFS) =     205.49

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.98   HALFSTREET FLOOD WIDTH(FEET) =  41.88
  FLOW VELOCITY(FEET/SEC.) =  5.74   DEPTH*VELOCITY(FT*FT/SEC.) =   5.61

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.09
  PIPE-FLOW(CFS) =     54.07
  PIPEFLOW TRAVEL TIME(MIN.) =   1.04    Tc(MIN.) =  22.97
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.224
  SUBAREA AREA(ACRES) =   19.98      SUBAREA RUNOFF(CFS) =   34.72
  TOTAL AREA(ACRES) =    123.97        PEAK FLOW RATE(CFS) =    209.46

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  155.40
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.89
    HALFSTREET FLOOD WIDTH(FEET) =   37.48
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.39
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.79
  LONGEST FLOWPATH FROM NODE  21540.00 TO NODE  21547.00 =  4863.82 FEET.

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  FLOW PROCESS FROM NODE LR021547.0 TO NODE LR021548.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1122.00  DOWNSTREAM ELEVATION(FEET) = 1115.00
  STREET LENGTH(FEET) =   537.06   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
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INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     221.85
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.99
  HALFSTREET FLOOD WIDTH(FEET) =   42.67
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.97
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.93
STREET FLOW TRAVEL TIME(MIN.) =   1.50   Tc(MIN.) =  24.47
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.141
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"8-10 DWELLINGS/ACRE"      B        8.51      0.75      0.40    56
PUBLIC PARK                B        4.88      0.75      0.85    56
COMMERCIAL                 B        0.69      0.75      0.10    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        1.83      0.75      0.60    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.55
SUBAREA AREA(ACRES) =   15.91      SUBAREA RUNOFF(CFS) =   24.79
EFFECTIVE AREA(ACRES) =    139.88    AREA-AVERAGED Fm(INCH/HR) =  0.35
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.47
TOTAL AREA(ACRES) =    139.88        PEAK FLOW RATE(CFS) =     225.02

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.00   HALFSTREET FLOOD WIDTH(FEET) =  42.92
FLOW VELOCITY(FEET/SEC.) =  5.99   DEPTH*VELOCITY(FT*FT/SEC.) =   5.98

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =   9.92
PIPE-FLOW(CFS) =     70.20
PIPEFLOW TRAVEL TIME(MIN.) =   0.90    Tc(MIN.) =  23.88
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.173
SUBAREA AREA(ACRES) =   15.91      SUBAREA RUNOFF(CFS) =   25.24
TOTAL AREA(ACRES) =    139.88        PEAK FLOW RATE(CFS) =    229.04

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  158.83
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  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.89
  HALFSTREET FLOOD WIDTH(FEET) =   37.42
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.53
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.91
LONGEST FLOWPATH FROM NODE  21540.00 TO NODE  21548.00 =  5400.88 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021548.0 TO NODE LR021549.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1115.00  DOWNSTREAM ELEVATION(FEET) = 1107.00
 STREET LENGTH(FEET) =   551.01   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     243.11
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  1.01
  HALFSTREET FLOOD WIDTH(FEET) =   43.34
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.35
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.39
 STREET FLOW TRAVEL TIME(MIN.) =   1.45   Tc(MIN.) =  25.32
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.097
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.06      0.75      0.60    56
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"      B       17.33      0.75      0.40    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
 SUBAREA AREA(ACRES) =   17.39      SUBAREA RUNOFF(CFS) =   28.14
 EFFECTIVE AREA(ACRES) =    157.27    AREA-AVERAGED Fm(INCH/HR) =  0.35
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.46
 TOTAL AREA(ACRES) =    157.27        PEAK FLOW RATE(CFS) =     247.69

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 1.01   HALFSTREET FLOOD WIDTH(FEET) =  43.65
 FLOW VELOCITY(FEET/SEC.) =  6.38   DEPTH*VELOCITY(FT*FT/SEC.) =   6.46
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  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.05
  PIPE-FLOW(CFS) =     91.73
  PIPEFLOW TRAVEL TIME(MIN.) =   0.83    Tc(MIN.) =  24.71
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.129
  SUBAREA AREA(ACRES) =   17.39      SUBAREA RUNOFF(CFS) =   28.62
  TOTAL AREA(ACRES) =    157.27        PEAK FLOW RATE(CFS) =    252.10

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  160.38
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.88
    HALFSTREET FLOOD WIDTH(FEET) =   36.75
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.78
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.06
  LONGEST FLOWPATH FROM NODE  21540.00 TO NODE  21549.00 =  5951.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021549.0 TO NODE LR021550.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1107.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1101.00
  FLOW LENGTH(FEET) =   766.86   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  USER SPECIFIED PIPE SYSTEM UNDER PRESSURE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.81
  PIPE-FLOW(CFS) =    212.43
  PIPEFLOW TRAVEL TIME(MIN.) =   1.18    Tc(MIN.) =  25.89
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.070
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.29      0.75      0.60    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B       13.34      0.75      0.40    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
  SUBAREA AREA(ACRES) =   13.63      SUBAREA RUNOFF(CFS) =   21.68
  EFFECTIVE AREA(ACRES) =    170.90    AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.46
  TOTAL AREA(ACRES) =    170.90        PEAK FLOW RATE(CFS) =    265.45

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75
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  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  6.0       STREET HALFWIDTH(FEET) = 18.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   53.02
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.68
    HALFSTREET FLOOD WIDTH(FEET) =   26.86
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.50
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.37
  LONGEST FLOWPATH FROM NODE  21540.00 TO NODE  21550.00 =  6718.75 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021550.0 TO NODE LR021551.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1101.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1100.00
  FLOW LENGTH(FEET) =  1070.86   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) = 102.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN 102.0 INCH PIPE IS  69.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.43
  PIPE-FLOW(CFS) =    265.45
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   2.97    Tc(MIN.) =  28.86
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.939
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       46.15      0.75      0.60    56
  COMMERCIAL                 B        0.53      0.75      0.10    56
  PUBLIC PARK                B        1.63      0.75      0.85    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.04      0.75      0.40    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   48.35      SUBAREA RUNOFF(CFS) =   64.76
  EFFECTIVE AREA(ACRES) =    219.25    AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.49
  TOTAL AREA(ACRES) =    219.25        PEAK FLOW RATE(CFS) =    310.12

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 32.00
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  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  *NOTE: STREET-CAPACITY MAY BE EXCEEDED*
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   44.66
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.93
    HALFSTREET FLOOD WIDTH(FEET) =   45.02
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.37
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.27
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  1070.9 FT WITH ELEVATION-DROP =   1.0 FT, IS   85.6 CFS,
         WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  21551.00
  LONGEST FLOWPATH FROM NODE  21540.00 TO NODE  21551.00 =  7789.61 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021551.0 TO NODE LR021584.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1100.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1099.00
  FLOW LENGTH(FEET) =   343.47   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  81.00    NUMBER OF PIPES =   1
  USER SPECIFIED PIPE SYSTEM UNDER PRESSURE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.06
  PIPE-FLOW(CFS) =    288.51
  PIPEFLOW TRAVEL TIME(MIN.) =   0.71    Tc(MIN.) =  29.57
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.911
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        1.51      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
  SUBAREA AREA(ACRES) =    1.51      SUBAREA RUNOFF(CFS) =    2.50
  EFFECTIVE AREA(ACRES) =    220.76    AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.49
  TOTAL AREA(ACRES) =    220.76        PEAK FLOW RATE(CFS) =    310.12
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 32.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
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  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   21.61
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.79
    HALFSTREET FLOOD WIDTH(FEET) =   38.19
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.02
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.60
  LONGEST FLOWPATH FROM NODE  21540.00 TO NODE  21584.00 =  8133.08 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021584.0 TO NODE LR021584.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  29.57
  RAINFALL INTENSITY(INCH/HR) =   1.91
  AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.49
  EFFECTIVE STREAM AREA(ACRES) =   220.76
  TOTAL STREAM AREA(ACRES) =   220.76
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    310.12

****************************************************************************
  FLOW PROCESS FROM NODE LR021560.0 TO NODE LR021561.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   620.68
  ELEVATION DATA: UPSTREAM(FEET) =   1123.00  DOWNSTREAM(FEET) =   1115.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.694
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.334
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        5.33      0.75      0.40    56   11.69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
  SUBAREA RUNOFF(CFS) =     14.56
  TOTAL AREA(ACRES) =      5.33   PEAK FLOW RATE(CFS) =     14.56

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

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  FLOW PROCESS FROM NODE LR021561.0 TO NODE LR021584.0 IS CODE =  33
----------------------------------------------------------------------------
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  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
================================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1115.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1099.00
  FLOW LENGTH(FEET) =  2676.72   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.23
  PIPE-FLOW(CFS) =     14.56
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   7.68    Tc(MIN.) =  19.37
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.463
  SUBAREA AREA(ACRES) =    0.00      SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =      5.33    AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.40
  TOTAL AREA(ACRES) =      5.33        PEAK FLOW RATE(CFS) =     14.56
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 2.96

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 32.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  *NOTE: ESTIMATED PEAK FLOW DEFAULTED TO UPSTREAM PEAK FLOW;
         STREET HYDRAULICS NOT COMPUTED*
  LONGEST FLOWPATH FROM NODE  21560.00 TO NODE  21584.00 =  3297.40 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021584.0 TO NODE LR021584.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  19.37
  RAINFALL INTENSITY(INCH/HR) =   2.46
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.40
  EFFECTIVE STREAM AREA(ACRES) =     5.33
  TOTAL STREAM AREA(ACRES) =     5.33
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     14.56

****************************************************************************
  FLOW PROCESS FROM NODE LR021570.0 TO NODE LR021571.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
```



```
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   940.47
  ELEVATION DATA: UPSTREAM(FEET) =   1173.00  DOWNSTREAM(FEET) =   1164.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.697
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.174
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"        B        6.71      0.75       0.20    56   12.70
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.20
  SUBAREA RUNOFF(CFS) =     18.26
  TOTAL AREA(ACRES) =      6.71   PEAK FLOW RATE(CFS) =     18.26

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021571.0 TO NODE LR021572.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 16 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1164.00  DOWNSTREAM ELEVATION(FEET) = 1162.00
  STREET LENGTH(FEET) =   345.55   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 12.50

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   5.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      29.11
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.61
    HALFSTREET FLOOD WIDTH(FEET) =   17.94
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.98
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.81
  STREET FLOW TRAVEL TIME(MIN.) =   1.93   Tc(MIN.) =  14.63
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.915
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"        B        8.71      0.75       0.20    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.20
  SUBAREA AREA(ACRES) =    8.71      SUBAREA RUNOFF(CFS) =   21.68
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  EFFECTIVE AREA(ACRES) =     15.42    AREA-AVERAGED Fm(INCH/HR) =  0.15
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.20
  TOTAL AREA(ACRES) =     15.42        PEAK FLOW RATE(CFS) =      38.38

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.67   HALFSTREET FLOOD WIDTH(FEET) =  20.93
  FLOW VELOCITY(FEET/SEC.) =  3.17   DEPTH*VELOCITY(FT*FT/SEC.) =   2.12
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  345.5 FT WITH ELEVATION-DROP =   2.0 FT, IS   28.6 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21572.00
  LONGEST FLOWPATH FROM NODE  21570.00 TO NODE  21572.00 =  1286.02 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021572.0 TO NODE LR021573.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 16 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1162.00  DOWNSTREAM ELEVATION(FEET) = 1157.00
  STREET LENGTH(FEET) =   421.59   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 12.50

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   5.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      49.09
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.64
    HALFSTREET FLOOD WIDTH(FEET) =   19.65
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.44
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.86
  STREET FLOW TRAVEL TIME(MIN.) =   1.58   Tc(MIN.) =  16.21
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.741
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B        9.18      0.75      0.20    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.20
  SUBAREA AREA(ACRES) =    9.18      SUBAREA RUNOFF(CFS) =   21.41
  EFFECTIVE AREA(ACRES) =     24.60    AREA-AVERAGED Fm(INCH/HR) =  0.15
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.20
  TOTAL AREA(ACRES) =     24.60        PEAK FLOW RATE(CFS) =      57.37

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75
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  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.68   HALFSTREET FLOOD WIDTH(FEET) =  21.42
  FLOW VELOCITY(FEET/SEC.) =  4.59   DEPTH*VELOCITY(FT*FT/SEC.) =   3.11
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  421.6 FT WITH ELEVATION-DROP =   5.0 FT, IS   31.4 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21573.00
  LONGEST FLOWPATH FROM NODE  21570.00 TO NODE  21573.00 =  1707.61 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021573.0 TO NODE LR021574.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 16 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1157.00  DOWNSTREAM ELEVATION(FEET) = 1153.00
  STREET LENGTH(FEET) =   469.25   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 12.50

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   5.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      68.56
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.76
    HALFSTREET FLOOD WIDTH(FEET) =   25.63
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.16
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.17
  STREET FLOW TRAVEL TIME(MIN.) =   1.88   Tc(MIN.) =  18.09
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.567
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B       10.28      0.75      0.20    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.20
  SUBAREA AREA(ACRES) =   10.28      SUBAREA RUNOFF(CFS) =   22.36
  EFFECTIVE AREA(ACRES) =     34.88    AREA-AVERAGED Fm(INCH/HR) =  0.15
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.20
  TOTAL AREA(ACRES) =     34.88        PEAK FLOW RATE(CFS) =      75.87

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.79   HALFSTREET FLOOD WIDTH(FEET) =  26.97
  FLOW VELOCITY(FEET/SEC.) =  4.24   DEPTH*VELOCITY(FT*FT/SEC.) =   3.35
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  469.2 FT WITH ELEVATION-DROP =   4.0 FT, IS   32.8 CFS,
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       WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21574.00
  LONGEST FLOWPATH FROM NODE  21570.00 TO NODE  21574.00 =  2176.86 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021574.0 TO NODE LR021575.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 16 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1153.00  DOWNSTREAM ELEVATION(FEET) = 1150.00
  STREET LENGTH(FEET) =   517.71   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 12.50

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   5.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      87.36
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.89
    HALFSTREET FLOOD WIDTH(FEET) =   31.79
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.71
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.29
  STREET FLOW TRAVEL TIME(MIN.) =   2.33   Tc(MIN.) =  20.42
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.387
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B       11.41      0.75      0.20    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.20
  SUBAREA AREA(ACRES) =   11.41      SUBAREA RUNOFF(CFS) =   22.97
  EFFECTIVE AREA(ACRES) =     46.29    AREA-AVERAGED Fm(INCH/HR) =  0.15
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.20
  TOTAL AREA(ACRES) =     46.29        PEAK FLOW RATE(CFS) =      93.21

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.91   HALFSTREET FLOOD WIDTH(FEET) =  32.77
  FLOW VELOCITY(FEET/SEC.) =  3.76   DEPTH*VELOCITY(FT*FT/SEC.) =   3.40

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.05
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  PIPE-FLOW(CFS) =     15.87
  PIPEFLOW TRAVEL TIME(MIN.) =   1.71    Tc(MIN.) =  19.80
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.431
  SUBAREA AREA(ACRES) =   11.41      SUBAREA RUNOFF(CFS) =   23.43
  TOTAL AREA(ACRES) =     46.29        PEAK FLOW RATE(CFS) =     95.05

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   79.18
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.86
    HALFSTREET FLOOD WIDTH(FEET) =   30.33
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.64
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.12
  LONGEST FLOWPATH FROM NODE  21570.00 TO NODE  21575.00 =  2694.57 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021575.0 TO NODE LR021576.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 16 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1150.00  DOWNSTREAM ELEVATION(FEET) = 1144.00
  STREET LENGTH(FEET) =   517.78   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 12.50

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   5.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     106.01
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.84
    HALFSTREET FLOOD WIDTH(FEET) =   29.54
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.10
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.29
  STREET FLOW TRAVEL TIME(MIN.) =   1.69   Tc(MIN.) =  21.49
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.315
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B       11.25      0.75      0.20    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.20
  SUBAREA AREA(ACRES) =   11.25      SUBAREA RUNOFF(CFS) =   21.92
  EFFECTIVE AREA(ACRES) =     57.54    AREA-AVERAGED Fm(INCH/HR) =  0.15
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.20
  TOTAL AREA(ACRES) =     57.54        PEAK FLOW RATE(CFS) =     112.11
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 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.86   HALFSTREET FLOOD WIDTH(FEET) =  30.33
 FLOW VELOCITY(FEET/SEC.) =  5.16   DEPTH*VELOCITY(FT*FT/SEC.) =   4.42
 ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
 ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
 ASSUME FULL-FLOWING PIPELINE
 PIPE-FLOW VELOCITY(FEET/SEC.) =   7.14
 PIPE-FLOW(CFS) =     22.45
 PIPEFLOW TRAVEL TIME(MIN.) =   1.21    Tc(MIN.) =  21.01
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.346
 SUBAREA AREA(ACRES) =   11.25      SUBAREA RUNOFF(CFS) =   22.24
 TOTAL AREA(ACRES) =     57.54        PEAK FLOW RATE(CFS) =    113.76

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   91.31
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.80
   HALFSTREET FLOOD WIDTH(FEET) =   27.40
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.98
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.97
 LONGEST FLOWPATH FROM NODE  21570.00 TO NODE  21576.00 =  3212.35 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021576.0 TO NODE LR021577.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 16 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1144.00  DOWNSTREAM ELEVATION(FEET) = 1136.00
 STREET LENGTH(FEET) =   506.86   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 12.50

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   5.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     124.38
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.84
   HALFSTREET FLOOD WIDTH(FEET) =   29.60
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.97
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.02
 STREET FLOW TRAVEL TIME(MIN.) =   1.42   Tc(MIN.) =  22.42
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.256
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 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "11+ DWELLINGS/ACRE"       B       11.21      0.75      0.20    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.20
 SUBAREA AREA(ACRES) =   11.21      SUBAREA RUNOFF(CFS) =   21.25
 EFFECTIVE AREA(ACRES) =     68.75    AREA-AVERAGED Fm(INCH/HR) =  0.15
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.20
 TOTAL AREA(ACRES) =     68.75        PEAK FLOW RATE(CFS) =     130.35

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.86   HALFSTREET FLOOD WIDTH(FEET) =  30.27
 FLOW VELOCITY(FEET/SEC.) =  6.02   DEPTH*VELOCITY(FT*FT/SEC.) =   5.15
 ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
 ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
 ASSUME FULL-FLOWING PIPELINE
 PIPE-FLOW VELOCITY(FEET/SEC.) =   8.33
 PIPE-FLOW(CFS) =     26.20
 PIPEFLOW TRAVEL TIME(MIN.) =   1.01    Tc(MIN.) =  22.02
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.281
 SUBAREA AREA(ACRES) =   11.21      SUBAREA RUNOFF(CFS) =   21.50
 TOTAL AREA(ACRES) =     68.75        PEAK FLOW RATE(CFS) =    131.87

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  105.67
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.80
   HALFSTREET FLOOD WIDTH(FEET) =   27.28
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.80
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.62
 LONGEST FLOWPATH FROM NODE  21570.00 TO NODE  21577.00 =  3719.21 FEET.

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 FLOW PROCESS FROM NODE LR021577.0 TO NODE LR021578.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 16 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1136.00  DOWNSTREAM ELEVATION(FEET) = 1130.00
 STREET LENGTH(FEET) =   412.82   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 12.50

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   5.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
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  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     140.45
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.89
    HALFSTREET FLOOD WIDTH(FEET) =   32.04
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.89
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.24
  STREET FLOW TRAVEL TIME(MIN.) =   1.17   Tc(MIN.) =  23.19
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.211
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B        8.62      0.75      0.20    56
  COMMERCIAL                 B        0.61      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.19
  SUBAREA AREA(ACRES) =    9.23      SUBAREA RUNOFF(CFS) =   17.17
  EFFECTIVE AREA(ACRES) =     77.98    AREA-AVERAGED Fm(INCH/HR) =  0.15
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.20
  TOTAL AREA(ACRES) =     77.98        PEAK FLOW RATE(CFS) =     144.73

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.90   HALFSTREET FLOOD WIDTH(FEET) =  32.47
  FLOW VELOCITY(FEET/SEC.) =  5.93   DEPTH*VELOCITY(FT*FT/SEC.) =   5.33
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.65
  PIPE-FLOW(CFS) =     34.42
  PIPEFLOW TRAVEL TIME(MIN.) =   0.80    Tc(MIN.) =  22.82
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.233
  SUBAREA AREA(ACRES) =    9.23      SUBAREA RUNOFF(CFS) =   17.35
  TOTAL AREA(ACRES) =     77.98        PEAK FLOW RATE(CFS) =    146.24

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  111.82
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.82
    HALFSTREET FLOOD WIDTH(FEET) =   28.68
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.65
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.66
  LONGEST FLOWPATH FROM NODE  21570.00 TO NODE  21578.00 =  4132.03 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021578.0 TO NODE LR021579.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 16 USED)<<<<<
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  UPSTREAM ELEVATION(FEET) = 1130.00  DOWNSTREAM ELEVATION(FEET) = 1123.00
  STREET LENGTH(FEET) =   399.88   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 12.50

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   5.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     154.44
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.89
    HALFSTREET FLOOD WIDTH(FEET) =   32.04
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.47
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.77
  STREET FLOW TRAVEL TIME(MIN.) =   1.03   Tc(MIN.) =  23.85
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.174
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B        4.85      0.75      0.20    56
  COMMERCIAL                 B        4.00      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.15
  SUBAREA AREA(ACRES) =    8.85      SUBAREA RUNOFF(CFS) =   16.40
  EFFECTIVE AREA(ACRES) =     86.83    AREA-AVERAGED Fm(INCH/HR) =  0.15
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.19
  TOTAL AREA(ACRES) =     86.83        PEAK FLOW RATE(CFS) =     158.55

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.90   HALFSTREET FLOOD WIDTH(FEET) =  32.47
  FLOW VELOCITY(FEET/SEC.) =  6.49   DEPTH*VELOCITY(FT*FT/SEC.) =   5.84
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.49
  PIPE-FLOW(CFS) =     37.77
  PIPEFLOW TRAVEL TIME(MIN.) =   0.70    Tc(MIN.) =  23.52
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.193
  SUBAREA AREA(ACRES) =    8.85      SUBAREA RUNOFF(CFS) =   16.54
  TOTAL AREA(ACRES) =     86.83        PEAK FLOW RATE(CFS) =    159.96

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  122.19
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
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    STREET FLOW DEPTH(FEET) =  0.82
    HALFSTREET FLOOD WIDTH(FEET) =   28.62
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.20
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.10
  LONGEST FLOWPATH FROM NODE  21570.00 TO NODE  21579.00 =  4531.91 FEET.

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  FLOW PROCESS FROM NODE LR021579.0 TO NODE LR021580.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 16 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1123.00  DOWNSTREAM ELEVATION(FEET) = 1118.00
  STREET LENGTH(FEET) =   423.30   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 12.50

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   5.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     169.00
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.98
    HALFSTREET FLOOD WIDTH(FEET) =   36.68
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.59
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.50
  STREET FLOW TRAVEL TIME(MIN.) =   1.26   Tc(MIN.) =  24.78
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.125
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B        4.37      0.75      0.20    56
  COMMERCIAL                 B        5.00      0.75      0.10    56
  PUBLIC PARK                B        0.80      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.20
  SUBAREA AREA(ACRES) =   10.17      SUBAREA RUNOFF(CFS) =   18.07
  EFFECTIVE AREA(ACRES) =     97.00    AREA-AVERAGED Fm(INCH/HR) =  0.15
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.20
  TOTAL AREA(ACRES) =     97.00        PEAK FLOW RATE(CFS) =     172.74

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.99   HALFSTREET FLOOD WIDTH(FEET) =  37.04
  FLOW VELOCITY(FEET/SEC.) =  5.61   DEPTH*VELOCITY(FT*FT/SEC.) =   5.56

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
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  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.91
  PIPE-FLOW(CFS) =     52.99
  PIPEFLOW TRAVEL TIME(MIN.) =   0.79    Tc(MIN.) =  24.31
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.149
  SUBAREA AREA(ACRES) =   10.17      SUBAREA RUNOFF(CFS) =   18.29
  TOTAL AREA(ACRES) =     97.00        PEAK FLOW RATE(CFS) =    174.88

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  121.89
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.88
    HALFSTREET FLOOD WIDTH(FEET) =   31.43
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.28
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.64
  LONGEST FLOWPATH FROM NODE  21570.00 TO NODE  21580.00 =  4955.21 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021580.0 TO NODE LR021581.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 16 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1118.00  DOWNSTREAM ELEVATION(FEET) = 1114.00
  STREET LENGTH(FEET) =   424.89   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 12.50

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   5.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     277.83
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.21
    HALFSTREET FLOOD WIDTH(FEET) =   48.15
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.59
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.78
  STREET FLOW TRAVEL TIME(MIN.) =   1.27   Tc(MIN.) =  25.58
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.085
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B      118.20      0.75      0.20    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
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  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.20
  SUBAREA AREA(ACRES) =  118.20      SUBAREA RUNOFF(CFS) =  205.88
  EFFECTIVE AREA(ACRES) =    215.20    AREA-AVERAGED Fm(INCH/HR) =  0.15
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.20
  TOTAL AREA(ACRES) =    215.20        PEAK FLOW RATE(CFS) =     375.13

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.35   HALFSTREET FLOOD WIDTH(FEET) =  54.81
  FLOW VELOCITY(FEET/SEC.) =  5.92   DEPTH*VELOCITY(FT*FT/SEC.) =   7.96

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  44.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.61
  PIPE-FLOW(CFS) =    174.88
  PIPEFLOW TRAVEL TIME(MIN.) =   0.56    Tc(MIN.) =  24.87
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.120
  SUBAREA AREA(ACRES) =  118.20      SUBAREA RUNOFF(CFS) =  209.63
  TOTAL AREA(ACRES) =    215.20        PEAK FLOW RATE(CFS) =    381.96

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75
  *NOTE: STREET-CAPACITY MAY BE EXCEEDED*
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  207.08
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.10
    HALFSTREET FLOOD WIDTH(FEET) =   42.29
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.30
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.80
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =   424.9 FT WITH ELEVATION-DROP =   4.0 FT, IS  391.8 CFS,
         WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  21581.00
  LONGEST FLOWPATH FROM NODE  21570.00 TO NODE  21581.00 =  5380.10 FEET.

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  FLOW PROCESS FROM NODE LR021581.0 TO NODE LR021582.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 16 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1114.00  DOWNSTREAM ELEVATION(FEET) = 1109.00
  STREET LENGTH(FEET) =   781.60   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 12.50

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   5.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
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  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     430.78
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.51
    HALFSTREET FLOOD WIDTH(FEET) =   62.98
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.21
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.87
  STREET FLOW TRAVEL TIME(MIN.) =   2.50   Tc(MIN.) =  27.37
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.002
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.48      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.11      0.75      0.60    56
  SCHOOL                     B        3.06      0.75      0.60    56
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B       55.41      0.75      0.20    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.22
  SUBAREA AREA(ACRES) =   59.06      SUBAREA RUNOFF(CFS) =   97.63
  EFFECTIVE AREA(ACRES) =    274.26    AREA-AVERAGED Fm(INCH/HR) =  0.15
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.20
  TOTAL AREA(ACRES) =    274.26        PEAK FLOW RATE(CFS) =     456.66

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.54   HALFSTREET FLOOD WIDTH(FEET) =  64.57
  FLOW VELOCITY(FEET/SEC.) =  5.27   DEPTH*VELOCITY(FT*FT/SEC.) =   8.12

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  78.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  78.0 INCH PIPE IS  63.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.28
  PIPE-FLOW(CFS) =    381.96
  PIPEFLOW TRAVEL TIME(MIN.) =   0.98    Tc(MIN.) =  25.85
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.072
  SUBAREA AREA(ACRES) =   59.06      SUBAREA RUNOFF(CFS) =  101.34
  TOTAL AREA(ACRES) =    274.26        PEAK FLOW RATE(CFS) =    473.88

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   91.92
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.89
    HALFSTREET FLOOD WIDTH(FEET) =   31.79
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.90
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    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.46
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =   781.6 FT WITH ELEVATION-DROP =   5.0 FT, IS  165.8 CFS,
         WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  21582.00
  LONGEST FLOWPATH FROM NODE  21570.00 TO NODE  21582.00 =  6161.70 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021582.0 TO NODE LR021583.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1109.00  DOWNSTREAM ELEVATION(FEET) = 1105.00
  STREET LENGTH(FEET) =   614.55   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     490.58
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.41
    HALFSTREET FLOOD WIDTH(FEET) =   76.17
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.15
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.26
  STREET FLOW TRAVEL TIME(MIN.) =   1.99   Tc(MIN.) =  27.84
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.981
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.96      0.75      0.10    56
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B        4.68      0.75      0.20    56
  MOBILE HOME PARK           B        8.89      0.75      0.25    56
  PUBLIC PARK                B        7.80      0.75      0.85    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.17      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.44
  SUBAREA AREA(ACRES) =   22.50      SUBAREA RUNOFF(CFS) =   33.40
  EFFECTIVE AREA(ACRES) =    296.76    AREA-AVERAGED Fm(INCH/HR) =  0.17
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.22
  TOTAL AREA(ACRES) =    296.76        PEAK FLOW RATE(CFS) =     485.05

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.41   HALFSTREET FLOOD WIDTH(FEET) =  75.93
  FLOW VELOCITY(FEET/SEC.) =  5.13   DEPTH*VELOCITY(FT*FT/SEC.) =   7.21
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  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 1.07
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  78.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.74
  PIPE-FLOW(CFS) =    390.07
  PIPEFLOW TRAVEL TIME(MIN.) =   0.87    Tc(MIN.) =  26.72
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.031
  SUBAREA AREA(ACRES) =   22.50      SUBAREA RUNOFF(CFS) =   34.40
  TOTAL AREA(ACRES) =    296.76        PEAK FLOW RATE(CFS) =    498.20

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  108.14
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.92
    HALFSTREET FLOOD WIDTH(FEET) =   50.94
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.30
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.04
  LONGEST FLOWPATH FROM NODE  21570.00 TO NODE  21583.00 =  6776.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021583.0 TO NODE LR021584.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1105.00  DOWNSTREAM ELEVATION(FEET) = 1099.00
  STREET LENGTH(FEET) =  1300.05   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     506.01
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.51
    HALFSTREET FLOOD WIDTH(FEET) =   80.99
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.58
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.91
  STREET FLOW TRAVEL TIME(MIN.) =   4.73   Tc(MIN.) =  31.45
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.842
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        9.80      0.75      0.10    56
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  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.02      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
  SUBAREA AREA(ACRES) =    9.82      SUBAREA RUNOFF(CFS) =   15.61
  EFFECTIVE AREA(ACRES) =    306.58    AREA-AVERAGED Fm(INCH/HR) =  0.16
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.22
  TOTAL AREA(ACRES) =    306.58        PEAK FLOW RATE(CFS) =     498.20
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.50   HALFSTREET FLOOD WIDTH(FEET) =  80.63
  FLOW VELOCITY(FEET/SEC.) =  4.56   DEPTH*VELOCITY(FT*FT/SEC.) =   6.84

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 1.07
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  84.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.39
  PIPE-FLOW(CFS) =    400.24
  PIPEFLOW TRAVEL TIME(MIN.) =   2.09    Tc(MIN.) =  28.81
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.941
  SUBAREA AREA(ACRES) =    9.82      SUBAREA RUNOFF(CFS) =   16.49
  TOTAL AREA(ACRES) =    306.58        PEAK FLOW RATE(CFS) =    498.20
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   97.96
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.94
    HALFSTREET FLOOD WIDTH(FEET) =   52.73
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.81
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.65
  LONGEST FLOWPATH FROM NODE  21570.00 TO NODE  21584.00 =  8076.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021584.0 TO NODE LR021584.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =  28.81
  RAINFALL INTENSITY(INCH/HR) =   1.94
  AREA-AVERAGED Fm(INCH/HR) =  0.16
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.22
  EFFECTIVE STREAM AREA(ACRES) =   306.58
  TOTAL STREAM AREA(ACRES) =   306.58
```



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  PEAK FLOW RATE(CFS) AT CONFLUENCE =    498.20

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    310.12  29.57    1.911  0.75( 0.37) 0.49   220.8 LR021540.0
      2     14.56  19.37    2.463  0.75( 0.30) 0.40     5.3 LR021560.0
      3    498.20  28.81    1.941  0.75( 0.16) 0.22   306.6 LR021570.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    723.56  19.37    2.463  0.75( 0.25) 0.33   356.1 LR021560.0
      2    817.27  28.81    1.941  0.75( 0.25) 0.33   527.0 LR021570.0
      3    810.71  29.57    1.911  0.75( 0.25) 0.33   532.7 LR021540.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    817.27    Tc(MIN.) =    28.81
  EFFECTIVE AREA(ACRES) =   526.98   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.33
  TOTAL AREA(ACRES) =    532.67
  LONGEST FLOWPATH FROM NODE  21540.00 TO NODE  21584.00 =  8133.08 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021584.0 TO NODE LR021585.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1099.00  DOWNSTREAM ELEVATION(FEET) = 1098.00
  STREET LENGTH(FEET) =  1435.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     861.66
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  2.62
    HALFSTREET FLOOD WIDTH(FEET) =  129.80
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.62
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.87
  STREET FLOW TRAVEL TIME(MIN.) =   9.13   Tc(MIN.) =  37.94
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.646
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
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RESIDENTIAL
".4 DWELLING/ACRE"         B        0.20      0.75      0.90    56
RESIDENTIAL
"5-7 DWELLINGS/ACRE"       B        4.29      0.75      0.50    56
COMMERCIAL                 B       59.18      0.75      0.10    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.13
SUBAREA AREA(ACRES) =   63.67      SUBAREA RUNOFF(CFS) =   88.75
EFFECTIVE AREA(ACRES) =    590.65    AREA-AVERAGED Fm(INCH/HR) =  0.23
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.31
TOTAL AREA(ACRES) =    596.34        PEAK FLOW RATE(CFS) =     817.27
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 2.57   HALFSTREET FLOOD WIDTH(FEET) = 127.23
FLOW VELOCITY(FEET/SEC.) =  2.59   DEPTH*VELOCITY(FT*FT/SEC.) =   6.66

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 1.07
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) = 120.00    NUMBER OF PIPES =   2
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =   5.12
PIPE-FLOW(CFS) =    805.29
PIPEFLOW TRAVEL TIME(MIN.) =   4.67    Tc(MIN.) =  33.48
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.774
SUBAREA AREA(ACRES) =   63.67      SUBAREA RUNOFF(CFS) =   96.10
TOTAL AREA(ACRES) =    596.34        PEAK FLOW RATE(CFS) =    820.41

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   15.12
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.72
  HALFSTREET FLOOD WIDTH(FEET) =   30.85
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    0.92
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.67
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
       AND L =  1435.0 FT WITH ELEVATION-DROP =   1.0 FT, IS  119.1 CFS,
       WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  21585.00

** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
    1    732.74  24.04    2.164  0.75( 0.22) 0.30   419.7 LR021560.0
    2    820.41  33.48    1.774  0.75( 0.23) 0.31   590.6 LR021570.0
    3    814.85  34.24    1.750  0.75( 0.23) 0.31   596.3 LR021540.0
NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) =    820.41  Tc(MIN.) =  33.48
AREA-AVERAGED Fm(INCH/HR) =  0.23  AREA-AVERAGED Fp(INCH/HR) =  0.75
AREA-AVERAGED Ap =  0.31  EFFECTIVE AREA(ACRES) =    590.65
LONGEST FLOWPATH FROM NODE  21540.00 TO NODE  21585.00 =  9568.08 FEET.
```



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****************************************************************************
  FLOW PROCESS FROM NODE LR021585.0 TO NODE LR021586.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1098.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1079.00
  FLOW LENGTH(FEET) =  1296.52   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  90.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  90.0 INCH PIPE IS  65.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  23.75
  PIPE-FLOW(CFS) =    820.41
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.98    Tc(MIN.) =  34.46
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.744
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.53      0.75      0.90    56
  PUBLIC PARK                B        0.25      0.75      0.85    56
  COMMERCIAL                 B       22.40      0.75      0.10    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.54      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.19
  SUBAREA AREA(ACRES) =   25.72      SUBAREA RUNOFF(CFS) =   36.99
  EFFECTIVE AREA(ACRES) =    616.37    AREA-AVERAGED Fm(INCH/HR) =  0.23
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.30
  TOTAL AREA(ACRES) =    622.06        PEAK FLOW RATE(CFS) =    841.25

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 32.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   20.84
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.51
    HALFSTREET FLOOD WIDTH(FEET) =   17.51
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.20
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.63

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    758.68  25.03    2.112  0.75( 0.22) 0.29   445.5 LR021560.0
```

```
     2    841.25  34.46    1.744  0.75( 0.23) 0.30   616.4 LR021570.0
     3    835.57  35.22    1.721  0.75( 0.23) 0.31   622.1 LR021540.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    841.25  Tc(MIN.) =  34.46
  AREA-AVERAGED Fm(INCH/HR) =  0.23  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.30  EFFECTIVE AREA(ACRES) =    616.37
  LONGEST FLOWPATH FROM NODE  21540.00 TO NODE  21586.00 = 10864.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021586.0 TO NODE LR021586.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    758.68  25.03    2.112  0.75( 0.22) 0.29   445.5 LR021560.0
     2    841.25  34.46    1.744  0.75( 0.23) 0.30   616.4 LR021570.0
     3    835.57  35.22    1.721  0.75( 0.23) 0.31   622.1 LR021540.0
  LONGEST FLOWPATH FROM NODE  21540.00 TO NODE  21586.00 = 10864.60 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     7682.27    Tc(MIN.) =  60.17
  AREA-AVERAGED Fm(INCH/HR) =  0.46    Ybar = 0.48
  TOTAL AREA(ACRES) =   14728.03
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21586.00 = 58318.40 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.44;30M= 0.91;1H= 1.20;3H= 1.94;6H= 2.64;24H= 5.74
  S-GRAPH: VALLEY(DEV.)= 79.0%;VALLEY(UNDEV.)/DESERT= 21.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 1.00; LAG(HR) = 0.80; Fm(INCH/HR) = 0.45; Ybar = 0.47
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.58; 30M = 0.60; 1HR = 0.61;
  3HR = 0.91; 6HR = 0.96; 24HR= 0.97
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  15350.09
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21586.00 = 58318.40 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0230; Lca/L=0.4,n=.0206; Lca/L=0.5,n=.0189;Lca/L=0.6,n=.0177
  TIME OF PEAK FLOW(HR) = 16.83  RUNOFF VOLUME(AF) =    3905.94
  PEAK FLOW RATE(CFS) =    7951.89

****************************************************************************
  FLOW PROCESS FROM NODE LR021586.0 TO NODE LR021586.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021586.0 TO NODE LR021586.0 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 21586.DNA
============================================================================
  END OF STUDY SUMMARY:
```



```
  TOTAL AREA(ACRES)     =  15350.09  TC(MIN.) =     60.17
  AREA-AVERAGED Fm(INCH/HR)=  0.45   Ybar =  0.47
  PEAK FLOW RATE(CFS)   =   7951.89
============================================================================
============================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

```
**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
         (c) Copyright 1983-2002 Advanced Engineering Software (aes)
             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                           County of San Bernardino
                         Transportation Flood Control

                           Water Resources Division

--------------------------------------------------------------------------
  FILE NAME: LR0216ZZ.Z13
  TIME/DATE OF STUDY: 09:36 11/08/2004
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.2500

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)     (n)
===  =====  ========  =================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
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    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


**************************************************************************
  FLOW PROCESS FROM NODE LR021600.0 TO NODE LR021601.0 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   909.54
  ELEVATION DATA: UPSTREAM(FEET) =   1100.00  DOWNSTREAM(FEET) =   1079.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.857
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.695
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  SCHOOL                     B        0.43      0.75       0.60    56   13.36
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.53      0.75       0.90    56   15.79
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        0.70      0.63       1.00    65   22.89
  COMMERCIAL                 B        2.31      0.75       0.10    56    9.86
  MOBILE HOME PARK           B        0.43      0.75       0.25    56   10.89
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.53      0.75       0.50    56   12.61
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.72
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA RUNOFF(CFS) =     17.81
  TOTAL AREA(ACRES) =      5.93   PEAK FLOW RATE(CFS) =     17.81

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

**************************************************************************
  FLOW PROCESS FROM NODE LR021601.0 TO NODE LR021602.0 IS CODE =  92
--------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
==========================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1079.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1078.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   351.04
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
```

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  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.176
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.25      0.75      0.40    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.17      0.75      0.90    56
  SCHOOL                     B        0.70      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.79
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     21.47
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.07
  AVERAGE FLOW DEPTH(FEET) =   0.73   FLOOD WIDTH(FEET) =   47.88
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   2.83   Tc(MIN.) =  12.69
  SUBAREA AREA(ACRES) =    3.12       SUBAREA RUNOFF(CFS) =    7.25
  EFFECTIVE AREA(ACRES) =    9.05     AREA-AVERAGED Fm(INCH/HR) =   0.44
  AREA-AVERAGED Fp(INCH/HR) =   0.73  AREA-AVERAGED Ap =   0.60
  TOTAL AREA(ACRES) =      9.05         PEAK FLOW RATE(CFS) =      22.30

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.74   FLOOD WIDTH(FEET) =   48.63
  FLOW VELOCITY(FEET/SEC.) =   2.09   DEPTH*VELOCITY(FT*FT/SEC) =   1.54
  LONGEST FLOWPATH FROM NODE  21600.00 TO NODE  21602.00 =  1260.58 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021602.0 TO NODE LR021603.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1078.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1077.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   262.00
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.945
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        2.61      0.75      0.40    56
  MOBILE HOME PARK           B        2.16      0.75      0.25    56
  COMMERCIAL                 B        1.99      0.75      0.10    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.42      0.75      0.90    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        1.39      0.63      1.00    65
  SCHOOL                     B        1.25      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.72
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.48
```



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  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     34.89
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.57
  AVERAGE FLOW DEPTH(FEET) =   0.79   FLOOD WIDTH(FEET) =   55.20
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   1.70   Tc(MIN.) =  14.39
  SUBAREA AREA(ACRES) =   10.82       SUBAREA RUNOFF(CFS) =   25.32
  EFFECTIVE AREA(ACRES) =   19.87     AREA-AVERAGED Fm(INCH/HR) =   0.39
  AREA-AVERAGED Fp(INCH/HR) =   0.72  AREA-AVERAGED Ap =   0.53
  TOTAL AREA(ACRES) =     19.87         PEAK FLOW RATE(CFS) =      45.74

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.85   FLOOD WIDTH(FEET) =   61.77
  FLOW VELOCITY(FEET/SEC.) =   2.71   DEPTH*VELOCITY(FT*FT/SEC) =   2.31
  LONGEST FLOWPATH FROM NODE  21600.00 TO NODE  21603.00 =  1522.58 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021603.0 TO NODE LR021604.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1077.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1076.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   267.00
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.768
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        4.96      0.75      0.40    56
  SCHOOL                     B        0.49      0.75      0.60    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        2.49      0.63      1.00    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.53      0.61      1.00    66
  MOBILE HOME PARK           B        3.02      0.75      0.25    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.58      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.53
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     58.80
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.85
  AVERAGE FLOW DEPTH(FEET) =   0.91   FLOOD WIDTH(FEET) =   68.64
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   1.56   Tc(MIN.) =  15.95
  SUBAREA AREA(ACRES) =   12.07       SUBAREA RUNOFF(CFS) =   26.13
  EFFECTIVE AREA(ACRES) =   31.94     AREA-AVERAGED Fm(INCH/HR) =   0.38
  AREA-AVERAGED Fp(INCH/HR) =   0.71  AREA-AVERAGED Ap =   0.53
  TOTAL AREA(ACRES) =     31.94         PEAK FLOW RATE(CFS) =      68.70

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA "V" GUTTER HYDRAULICS:
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```
  DEPTH(FEET) =  0.94   FLOOD WIDTH(FEET) =   72.97
  FLOW VELOCITY(FEET/SEC.) =   2.95   DEPTH*VELOCITY(FT*FT/SEC) =   2.79
  LONGEST FLOWPATH FROM NODE  21600.00 TO NODE  21604.00 =  1789.58 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021604.0 TO NODE LR021605.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1076.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1074.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   286.04
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.648
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        6.10      0.75      0.40    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        1.99      0.63      1.00    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.73      0.61      1.00    66
  MOBILE HOME PARK           B        2.69      0.75      0.25    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.57      0.75      0.90    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.65      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.56
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     82.69
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.92
  AVERAGE FLOW DEPTH(FEET) =   0.91   FLOOD WIDTH(FEET) =   69.39
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   1.22   Tc(MIN.) =  17.17
  SUBAREA AREA(ACRES) =   13.73       SUBAREA RUNOFF(CFS) =   27.98
  EFFECTIVE AREA(ACRES) =   45.67     AREA-AVERAGED Fm(INCH/HR) =   0.38
  AREA-AVERAGED Fp(INCH/HR) =   0.70  AREA-AVERAGED Ap =   0.54
  TOTAL AREA(ACRES) =     45.67         PEAK FLOW RATE(CFS) =      93.25

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.94   FLOOD WIDTH(FEET) =   72.82
  FLOW VELOCITY(FEET/SEC.) =   4.02   DEPTH*VELOCITY(FT*FT/SEC) =   3.80
  LONGEST FLOWPATH FROM NODE  21600.00 TO NODE  21605.00 =  2075.62 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021605.0 TO NODE LR021606.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1074.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1072.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   319.04
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  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.532
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        7.94      0.75      0.40    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        1.87      0.63      1.00    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.70      0.61      1.00    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        3.94      0.75      0.90    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.64      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.71
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.66
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    108.22
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.99
  AVERAGE FLOW DEPTH(FEET) =   1.00   FLOOD WIDTH(FEET) =   78.95
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   1.33   Tc(MIN.) =  18.50
  SUBAREA AREA(ACRES) =   16.09       SUBAREA RUNOFF(CFS) =   29.93
  EFFECTIVE AREA(ACRES) =   61.76     AREA-AVERAGED Fm(INCH/HR) =   0.40
  AREA-AVERAGED Fp(INCH/HR) =   0.70  AREA-AVERAGED Ap =   0.57
  TOTAL AREA(ACRES) =     61.76         PEAK FLOW RATE(CFS) =     118.41

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75
  ** PIPE SIZED TO MAXIMIZE V-GUTTER FLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.25
  PIPE-FLOW(CFS) =     16.51
  PIPEFLOW TRAVEL TIME(MIN.) =   1.01    Tc(MIN.) =  18.18
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.559
  SUBAREA AREA(ACRES) =   16.09      SUBAREA RUNOFF(CFS) =   30.32
  EFFECTIVE AREA(ACRES) =   61.76    AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.54  AREA-AVERAGED Ap =  0.74
  TOTAL AREA(ACRES) =     61.76        PEAK FLOW RATE(CFS) =    119.89
  V-GUTTER HYDRAULICS BASED ON MAINLINE Tc :
  V-GUTTER HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  103.38

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.98   FLOOD WIDTH(FEET) =   77.60
  FLOW VELOCITY(FEET/SEC.) =   3.94   DEPTH*VELOCITY(FT*FT/SEC) =   3.88
  LONGEST FLOWPATH FROM NODE  21600.00 TO NODE  21606.00 =  2394.66 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021606.0 TO NODE LR021607.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1072.00  DOWNSTREAM ELEVATION(FEET) = 1068.00
  STREET LENGTH(FEET) =   610.02   CURB HEIGHT(INCHES) =  6.0
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STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     147.59
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.97
  HALFSTREET FLOOD WIDTH(FEET) =   41.64
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.17
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.06
STREET FLOW TRAVEL TIME(MIN.) =   2.44   Tc(MIN.) =  20.94
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.351
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
SCHOOL                     B        2.14      0.75      0.60    56
RESIDENTIAL
"8-10 DWELLINGS/ACRE"      B       21.35      0.75      0.40    56
RESIDENTIAL
".4 DWELLING/ACRE"         B        7.25      0.75      0.90    56
RESIDENTIAL
"5-7 DWELLINGS/ACRE"       B        0.76      0.75      0.50    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.53
SUBAREA AREA(ACRES) =   31.50      SUBAREA RUNOFF(CFS) =   55.39
EFFECTIVE AREA(ACRES) =     93.26    AREA-AVERAGED Fm(INCH/HR) =  0.40
AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap =  0.67
TOTAL AREA(ACRES) =     93.26        PEAK FLOW RATE(CFS) =     163.71

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.01   HALFSTREET FLOOD WIDTH(FEET) =  43.41
FLOW VELOCITY(FEET/SEC.) =  4.26   DEPTH*VELOCITY(FT*FT/SEC.) =   4.30

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =   7.42
PIPE-FLOW(CFS) =     61.65
PIPEFLOW TRAVEL TIME(MIN.) =   1.37    Tc(MIN.) =  19.87
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.426
SUBAREA AREA(ACRES) =   31.50      SUBAREA RUNOFF(CFS) =   57.52
TOTAL AREA(ACRES) =     93.26        PEAK FLOW RATE(CFS) =    170.02
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  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  108.37
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.88
    HALFSTREET FLOOD WIDTH(FEET) =   36.81
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.89
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.41
  LONGEST FLOWPATH FROM NODE  21600.00 TO NODE  21607.00 =  3004.68 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021607.0 TO NODE LR021608.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1068.00  DOWNSTREAM ELEVATION(FEET) = 1065.00
  STREET LENGTH(FEET) =   648.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     199.79
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.15
    HALFSTREET FLOOD WIDTH(FEET) =   50.30
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.89
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.46
  STREET FLOW TRAVEL TIME(MIN.) =   2.78   Tc(MIN.) =  22.65
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.243
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B       17.95      0.75      0.40    56
  SCHOOL                     B        7.42      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        9.92      0.75      0.90    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        1.26      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.58
  SUBAREA AREA(ACRES) =   36.55      SUBAREA RUNOFF(CFS) =   59.51
  EFFECTIVE AREA(ACRES) =    129.81    AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.64  AREA-AVERAGED Ap =  0.65
  TOTAL AREA(ACRES) =    129.81        PEAK FLOW RATE(CFS) =     214.16
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  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.17   HALFSTREET FLOOD WIDTH(FEET) =  51.71
  FLOW VELOCITY(FEET/SEC.) =  3.95   DEPTH*VELOCITY(FT*FT/SEC.) =   4.64

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.03
  PIPE-FLOW(CFS) =    142.46
  PIPEFLOW TRAVEL TIME(MIN.) =   1.35    Tc(MIN.) =  21.21
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.333
  SUBAREA AREA(ACRES) =   36.55      SUBAREA RUNOFF(CFS) =   62.46
  TOTAL AREA(ACRES) =    129.81        PEAK FLOW RATE(CFS) =    224.63

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   82.17
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.85
    HALFSTREET FLOOD WIDTH(FEET) =   35.35
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.19
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.71
  LONGEST FLOWPATH FROM NODE  21600.00 TO NODE  21608.00 =  3653.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021608.0 TO NODE LR021621.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1065.00  DOWNSTREAM ELEVATION(FEET) = 1064.00
  STREET LENGTH(FEET) =   963.89   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     224.63
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.56
    HALFSTREET FLOOD WIDTH(FEET) =   70.81
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.22
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    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.46
  STREET FLOW TRAVEL TIME(MIN.) =   7.22   Tc(MIN.) =  28.44
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.956
  SUBAREA AREA(ACRES) =    0.00      SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =    129.81    AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.64  AREA-AVERAGED Ap =  0.65
  TOTAL AREA(ACRES) =    129.81        PEAK FLOW RATE(CFS) =     224.63
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 3.03

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.56   HALFSTREET FLOOD WIDTH(FEET) =  70.81
  FLOW VELOCITY(FEET/SEC.) =  2.22   DEPTH*VELOCITY(FT*FT/SEC.) =   3.46

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  84.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.93
  PIPE-FLOW(CFS) =    189.76
  PIPEFLOW TRAVEL TIME(MIN.) =   3.26    Tc(MIN.) =  24.47
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.141
  SUBAREA AREA(ACRES) =    0.00      SUBAREA RUNOFF(CFS) =    0.00
  TOTAL AREA(ACRES) =    129.81        PEAK FLOW RATE(CFS) =    224.63
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 3.03
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   34.87
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.82
    HALFSTREET FLOOD WIDTH(FEET) =   33.88
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.47
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.20
  LONGEST FLOWPATH FROM NODE  21600.00 TO NODE  21621.00 =  4617.07 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021621.0 TO NODE LR021621.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  24.47
  RAINFALL INTENSITY(INCH/HR) =   2.14
  AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.64
  AREA-AVERAGED Ap =  0.65
  EFFECTIVE STREAM AREA(ACRES) =   129.81
  TOTAL STREAM AREA(ACRES) =   129.81
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    224.63
```

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****************************************************************************
  FLOW PROCESS FROM NODE LR021610.0 TO NODE LR021611.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   741.08
  ELEVATION DATA: UPSTREAM(FEET) =   1080.00  DOWNSTREAM(FEET) =   1079.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   16.025
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.760
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.71      0.75      0.60    56   21.72
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        1.82      0.75      0.40    56   19.71
  COMMERCIAL                 B        0.99      0.75      0.10    56   16.02
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.49
  SUBAREA RUNOFF(CFS) =     16.22
  TOTAL AREA(ACRES) =      7.52   PEAK FLOW RATE(CFS) =     16.22

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021611.0 TO NODE LR021612.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1079.00  DOWNSTREAM ELEVATION(FEET) = 1078.00
  STREET LENGTH(FEET) =   186.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      22.40
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.56
    HALFSTREET FLOOD WIDTH(FEET) =   20.88
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.37
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.32
  STREET FLOW TRAVEL TIME(MIN.) =   1.31   Tc(MIN.) =  17.33
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.633
  SUBAREA LOSS RATE DATA(AMC  II):
```



```
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.69      0.75      0.60    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        1.54      0.75      0.40    56
  COMMERCIAL                 B        0.81      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.48
  SUBAREA AREA(ACRES) =     6.04      SUBAREA RUNOFF(CFS) =   12.35
  EFFECTIVE AREA(ACRES) =     13.56    AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.48
  TOTAL AREA(ACRES) =     13.56        PEAK FLOW RATE(CFS) =      27.72

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.59   HALFSTREET FLOOD WIDTH(FEET) =  22.59
  FLOW VELOCITY(FEET/SEC.) =  2.53   DEPTH*VELOCITY(FT*FT/SEC.) =   1.50
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  186.0 FT WITH ELEVATION-DROP =   1.0 FT, IS   22.7 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21612.00
  LONGEST FLOWPATH FROM NODE  21610.00 TO NODE  21612.00 =   927.08 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021612.0 TO NODE LR021613.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1078.00  DOWNSTREAM ELEVATION(FEET) = 1077.00
  STREET LENGTH(FEET) =   171.57   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      32.90
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.61
    HALFSTREET FLOOD WIDTH(FEET) =   23.69
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.75
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.69
  STREET FLOW TRAVEL TIME(MIN.) =   1.04   Tc(MIN.) =  18.37
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.543
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
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  "3-4 DWELLINGS/ACRE"       B        2.58      0.75      0.60    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        1.42      0.75      0.40    56
  COMMERCIAL                 B        1.19      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.43
  SUBAREA AREA(ACRES) =    5.19      SUBAREA RUNOFF(CFS) =   10.37
  EFFECTIVE AREA(ACRES) =     18.75    AREA-AVERAGED Fm(INCH/HR) =  0.35
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.47
  TOTAL AREA(ACRES) =     18.75        PEAK FLOW RATE(CFS) =      36.99

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.64   HALFSTREET FLOOD WIDTH(FEET) =  24.79
  FLOW VELOCITY(FEET/SEC.) =  2.84   DEPTH*VELOCITY(FT*FT/SEC.) =   1.81
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  171.6 FT WITH ELEVATION-DROP =   1.0 FT, IS   20.3 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21613.00
  LONGEST FLOWPATH FROM NODE  21610.00 TO NODE  21613.00 =  1098.65 FEET.

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  FLOW PROCESS FROM NODE LR021613.0 TO NODE LR021614.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1077.00  DOWNSTREAM ELEVATION(FEET) = 1076.00
  STREET LENGTH(FEET) =   262.04   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      43.78
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.71
    HALFSTREET FLOOD WIDTH(FEET) =   28.70
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.55
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.82
  STREET FLOW TRAVEL TIME(MIN.) =   1.72   Tc(MIN.) =  20.09
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.410
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.80      0.75      0.60    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        2.60      0.75      0.40    56
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  COMMERCIAL                 B        0.92      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.47
  SUBAREA AREA(ACRES) =    7.32      SUBAREA RUNOFF(CFS) =   13.58
  EFFECTIVE AREA(ACRES) =     26.07    AREA-AVERAGED Fm(INCH/HR) =  0.35
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.47
  TOTAL AREA(ACRES) =     26.07        PEAK FLOW RATE(CFS) =      48.33

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.74   HALFSTREET FLOOD WIDTH(FEET) =  29.79
  FLOW VELOCITY(FEET/SEC.) =  2.61   DEPTH*VELOCITY(FT*FT/SEC.) =   1.92
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  262.0 FT WITH ELEVATION-DROP =   1.0 FT, IS   24.1 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21614.00
  LONGEST FLOWPATH FROM NODE  21610.00 TO NODE  21614.00 =  1360.69 FEET.

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  FLOW PROCESS FROM NODE LR021614.0 TO NODE LR021615.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1076.00  DOWNSTREAM ELEVATION(FEET) = 1075.00
  STREET LENGTH(FEET) =   167.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      52.39
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.70
    HALFSTREET FLOOD WIDTH(FEET) =   28.21
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.15
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.22
  STREET FLOW TRAVEL TIME(MIN.) =   0.88   Tc(MIN.) =  20.97
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.349
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.50      0.75      0.60    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        2.09      0.75      0.40    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.51
  SUBAREA AREA(ACRES) =    4.59      SUBAREA RUNOFF(CFS) =    8.13
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  EFFECTIVE AREA(ACRES) =     30.66    AREA-AVERAGED Fm(INCH/HR) =  0.35
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.47
  TOTAL AREA(ACRES) =     30.66        PEAK FLOW RATE(CFS) =      55.01

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.71   HALFSTREET FLOOD WIDTH(FEET) =  28.70
  FLOW VELOCITY(FEET/SEC.) =  3.20   DEPTH*VELOCITY(FT*FT/SEC.) =   2.28
  LONGEST FLOWPATH FROM NODE  21610.00 TO NODE  21615.00 =  1527.69 FEET.

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  FLOW PROCESS FROM NODE LR021615.0 TO NODE LR021616.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1075.00  DOWNSTREAM ELEVATION(FEET) = 1073.00
  STREET LENGTH(FEET) =   333.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      61.61
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.74
    HALFSTREET FLOOD WIDTH(FEET) =   30.04
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.28
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.43
  STREET FLOW TRAVEL TIME(MIN.) =   1.69   Tc(MIN.) =  22.67
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.242
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.75      0.75      0.60    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        3.16      0.75      0.40    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.52
  SUBAREA AREA(ACRES) =    7.91      SUBAREA RUNOFF(CFS) =   13.19
  EFFECTIVE AREA(ACRES) =     38.57    AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.48
  TOTAL AREA(ACRES) =     38.57        PEAK FLOW RATE(CFS) =      65.25

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75
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  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.75   HALFSTREET FLOOD WIDTH(FEET) =  30.71
  FLOW VELOCITY(FEET/SEC.) =  3.33   DEPTH*VELOCITY(FT*FT/SEC.) =   2.51
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  333.5 FT WITH ELEVATION-DROP =   2.0 FT, IS   22.4 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21616.00
  LONGEST FLOWPATH FROM NODE  21610.00 TO NODE  21616.00 =  1861.19 FEET.

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  FLOW PROCESS FROM NODE LR021616.0 TO NODE LR021617.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1073.00  DOWNSTREAM ELEVATION(FEET) = 1071.00
  STREET LENGTH(FEET) =   271.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      70.12
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.75
    HALFSTREET FLOOD WIDTH(FEET) =   30.34
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.66
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.74
  STREET FLOW TRAVEL TIME(MIN.) =   1.24   Tc(MIN.) =  23.90
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.171
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.01      0.75      0.60    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        2.09      0.75      0.40    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.53
  SUBAREA AREA(ACRES) =    6.10      SUBAREA RUNOFF(CFS) =    9.74
  EFFECTIVE AREA(ACRES) =     44.67    AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.49
  TOTAL AREA(ACRES) =     44.67        PEAK FLOW RATE(CFS) =      72.55

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.75   HALFSTREET FLOOD WIDTH(FEET) =  30.71
  FLOW VELOCITY(FEET/SEC.) =  3.70   DEPTH*VELOCITY(FT*FT/SEC.) =   2.79
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
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       AND L =  271.5 FT WITH ELEVATION-DROP =   2.0 FT, IS   18.7 CFS,
       WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21617.00
 LONGEST FLOWPATH FROM NODE  21610.00 TO NODE  21617.00 =  2132.69 FEET.

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 FLOW PROCESS FROM NODE LR021617.0 TO NODE LR021618.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1071.00  DOWNSTREAM ELEVATION(FEET) = 1069.00
 STREET LENGTH(FEET) =   310.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      77.63
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.79
   HALFSTREET FLOOD WIDTH(FEET) =   32.42
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.57
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.81
 STREET FLOW TRAVEL TIME(MIN.) =   1.45   Tc(MIN.) =  25.35
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.096
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        4.74      0.75      0.60    56
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"      B        1.94      0.75      0.40    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.54
 SUBAREA AREA(ACRES) =    6.68      SUBAREA RUNOFF(CFS) =   10.16
 EFFECTIVE AREA(ACRES) =     51.35    AREA-AVERAGED Fm(INCH/HR) =  0.37
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.50
 TOTAL AREA(ACRES) =     51.35        PEAK FLOW RATE(CFS) =      79.69

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.79   HALFSTREET FLOOD WIDTH(FEET) =  32.72
 FLOW VELOCITY(FEET/SEC.) =  3.60   DEPTH*VELOCITY(FT*FT/SEC.) =   2.86
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
       AND L =  310.0 FT WITH ELEVATION-DROP =   2.0 FT, IS   19.4 CFS,
       WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21618.00
 LONGEST FLOWPATH FROM NODE  21610.00 TO NODE  21618.00 =  2442.69 FEET.
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 FLOW PROCESS FROM NODE LR021618.0 TO NODE LR021619.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1069.00  DOWNSTREAM ELEVATION(FEET) = 1066.00
 STREET LENGTH(FEET) =   414.50   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      85.70
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.80
   HALFSTREET FLOOD WIDTH(FEET) =   32.91
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.83
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.06
 STREET FLOW TRAVEL TIME(MIN.) =   1.80   Tc(MIN.) =  27.15
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.011
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        6.17      0.75      0.60    56
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"      B        2.17      0.75      0.40    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.55
 SUBAREA AREA(ACRES) =    8.34      SUBAREA RUNOFF(CFS) =   12.02
 EFFECTIVE AREA(ACRES) =     59.69    AREA-AVERAGED Fm(INCH/HR) =  0.38
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.50
 TOTAL AREA(ACRES) =     59.69        PEAK FLOW RATE(CFS) =      87.80

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.80   HALFSTREET FLOOD WIDTH(FEET) =  33.21
 FLOW VELOCITY(FEET/SEC.) =  3.85   DEPTH*VELOCITY(FT*FT/SEC.) =   3.10
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
       AND L =  414.5 FT WITH ELEVATION-DROP =   3.0 FT, IS   22.7 CFS,
       WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21619.00
 LONGEST FLOWPATH FROM NODE  21610.00 TO NODE  21619.00 =  2857.19 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021619.0 TO NODE LR021620.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
==========================================================================
 UPSTREAM ELEVATION(FEET) = 1066.00  DOWNSTREAM ELEVATION(FEET) = 1065.00
 STREET LENGTH(FEET) =   329.03   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      92.19
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.94
   HALFSTREET FLOOD WIDTH(FEET) =   40.23
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.79
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.63
 STREET FLOW TRAVEL TIME(MIN.) =   1.97   Tc(MIN.) =  29.12
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.929
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 B        0.33      0.75      0.10    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        4.54      0.75      0.60    56
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"      B        1.50      0.75      0.40    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.53
 SUBAREA AREA(ACRES) =    6.37      SUBAREA RUNOFF(CFS) =    8.80
 EFFECTIVE AREA(ACRES) =     66.06    AREA-AVERAGED Fm(INCH/HR) =  0.38
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.51
 TOTAL AREA(ACRES) =     66.06        PEAK FLOW RATE(CFS) =      92.15

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.94   HALFSTREET FLOOD WIDTH(FEET) =  40.23
 FLOW VELOCITY(FEET/SEC.) =  2.78   DEPTH*VELOCITY(FT*FT/SEC.) =   2.63

 *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
        THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
 SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
 ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
 ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
 ASSUME FULL-FLOWING PIPELINE
 PIPE-FLOW VELOCITY(FEET/SEC.) =   3.96
 PIPE-FLOW(CFS) =     15.74
 PIPEFLOW TRAVEL TIME(MIN.) =   1.39    Tc(MIN.) =  28.54
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.952
 SUBAREA AREA(ACRES) =    6.37      SUBAREA RUNOFF(CFS) =    8.93
```



```
 TOTAL AREA(ACRES) =     66.06        PEAK FLOW RATE(CFS) =     93.55

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   77.81
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.89
   HALFSTREET FLOOD WIDTH(FEET) =   37.61
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.68
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.39
 LONGEST FLOWPATH FROM NODE  21610.00 TO NODE  21620.00 =  3186.22 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021620.0 TO NODE LR021621.0 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1065.00  DOWNSTREAM(FEET) =  1064.00
 FLOW LENGTH(FEET) =   255.17   MANNING'S N =  0.013
 DEPTH OF FLOW IN  51.0 INCH PIPE IS  40.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   7.82
 ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     93.55
 PIPE TRAVEL TIME(MIN.) =   0.54    Tc(MIN.) =  29.08
 LONGEST FLOWPATH FROM NODE  21610.00 TO NODE  21621.00 =  3441.39 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021621.0 TO NODE LR021621.0 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  29.08
 RAINFALL INTENSITY(INCH/HR) =   1.93
 AREA-AVERAGED Fm(INCH/HR) =  0.38
 AREA-AVERAGED Fp(INCH/HR) =  0.75
 AREA-AVERAGED Ap =  0.51
 EFFECTIVE STREAM AREA(ACRES) =    66.06
 TOTAL STREAM AREA(ACRES) =    66.06
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     93.55

 ** CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    224.63  24.47    2.141  0.64( 0.41) 0.65   129.8 LR021600.0
     2     93.55  29.08    1.930  0.75( 0.38) 0.51    66.1 LR021610.0

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
```

```
      1    314.04  24.47    2.141  0.66( 0.40) 0.60   185.4 LR021600.0
      2    290.86  29.08    1.930  0.67( 0.40) 0.60   195.9 LR021610.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    314.04    Tc(MIN.) =    24.47
  EFFECTIVE AREA(ACRES) =   185.40   AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =    195.87
  LONGEST FLOWPATH FROM NODE  21600.00 TO NODE  21621.00 =  4617.07 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021621.0 TO NODE LR021621.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021586.0 TO NODE LR021586.0 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 21586.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     7951.89    Tc(MIN.) =  60.17
  AREA-AVERAGED Fm(INCH/HR) =  0.45    Ybar = 0.47
  TOTAL AREA(ACRES) =   15350.09
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21586.00 = 58318.40 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021586.0 TO NODE LR021586.0 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     7951.89    Tc(MIN.) =  60.17
  AREA-AVERAGED Fm(INCH/HR) =  0.45    Ybar = 0.47
  TOTAL AREA(ACRES) =   15350.09
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21586.00 = 58318.40 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021586.0 TO NODE LR021586.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021586.0 TO NODE LR021621.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1079.00  DOWNSTREAM(FEET) =   1064.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2939.98   CHANNEL SLOPE =  0.0051
  CHANNEL BASE(FEET) =   22.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =  11.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   7951.89
  FLOW VELOCITY(FEET/SEC.) =  22.61   FLOW DEPTH(FEET) =   8.85
```



```
  TRAVEL TIME(MIN.) =   2.17   Tc(MIN.) =  62.34
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21621.00 = 61258.38 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021621.0 TO NODE LR021621.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  62.34
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.222
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        6.61      0.75       0.40    56
  COMMERCIAL                 B        3.08      0.75       0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.19      0.75       0.60    56
  SCHOOL                     B        1.79      0.75       0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.73      0.75       0.90    56
  PUBLIC PARK                B        0.69      0.75       0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.44
  SUBAREA AREA(ACRES) =   15.09
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.44;30M= 0.91;1H= 1.20;3H= 1.94;6H= 2.64;24H= 5.74
  S-GRAPH: VALLEY(DEV.)= 79.0%;VALLEY(UNDEV.)/DESERT= 21.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 1.04; LAG(HR) = 0.83; Fm(INCH/HR) = 0.45; Ybar = 0.47
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.58; 30M = 0.60; 1HR = 0.61;
  3HR = 0.91; 6HR = 0.96; 24HR= 0.97
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  15365.18
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21621.00 = 61258.38 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0228; Lca/L=0.4,n=.0204; Lca/L=0.5,n=.0188;Lca/L=0.6,n=.0175
  TIME OF PEAK FLOW(HR) = 16.83  RUNOFF VOLUME(AF) =    3909.52
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   7706.96
  TOTAL AREA(ACRES) =  15365.18       PEAK FLOW RATE(CFS) =    7951.89
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021621.0 TO NODE LR021621.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     7951.89    Tc(MIN.) =  62.34
  AREA-AVERAGED Fm(INCH/HR) =  0.45    Ybar = 0.47
  TOTAL AREA(ACRES) =   15365.18
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21621.00 = 61258.38 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
```

```
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
    1    314.04  24.47    2.141  0.66( 0.40) 0.60   185.4 LR021600.0
    2    290.86  29.08    1.930  0.67( 0.40) 0.60   195.9 LR021610.0
 LONGEST FLOWPATH FROM NODE  21600.00 TO NODE  21621.00 =  4617.07 FEET.

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 UNIT-HYDROGRAPH DATA:
 RAINFALL(INCH): 5M= 0.45;30M= 0.91;1H= 1.20;3H= 1.94;6H= 2.63;24H= 5.73
 S-GRAPH: VALLEY(DEV.)= 79.0%;VALLEY(UNDEV.)/DESERT= 21.0%
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
 Tc(HR) = 1.04; LAG(HR) = 0.83; Fm(INCH/HR) = 0.45; Ybar = 0.47
 USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
 DEPTH-AREA FACTORS: 5M = 0.58; 30M = 0.60; 1HR = 0.61;
 3HR = 0.91; 6HR = 0.96; 24HR= 0.97
 UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  15561.05
 LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21621.00 = 61258.38 FEET.
  EQUIVALENT BASIN FACTOR APPROXIMATIONS:
  Lca/L=0.3,n=.0228; Lca/L=0.4,n=.0204; Lca/L=0.5,n=.0188;Lca/L=0.6,n=.0175
 TIME OF PEAK FLOW(HR) = 16.83  RUNOFF VOLUME(AF) =    3949.94
 PEAK FLOW RATE(CFS) =    7774.71
   (UPSTREAM NODE PEAK FLOW RATE(CFS) =   7951.89)
 PEAK FLOW RATE(CFS) USED =   7951.89

****************************************************************************
 FLOW PROCESS FROM NODE LR021621.0 TO NODE LR021621.0 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE LR021621.0 TO NODE LR021649.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1064.00  DOWNSTREAM(FEET) =   1051.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2224.00   CHANNEL SLOPE =  0.0058
 CHANNEL BASE(FEET) =   22.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =  11.00
 CHANNEL FLOW THRU SUBAREA(CFS) =   7951.89
 FLOW VELOCITY(FEET/SEC.) =  23.76   FLOW DEPTH(FEET) =   8.56
 TRAVEL TIME(MIN.) =   1.56   Tc(MIN.) =  63.90
 LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21649.00 = 63482.38 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021649.0 TO NODE LR021649.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  63.90
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.204
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 B        4.38      0.75      0.10    56
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        0.29      0.75      0.90    56
```



```
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"      B       27.30      0.75      0.40    56
 MOBILE HOME PARK           B        0.28      0.75      0.25    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.36
 SUBAREA AREA(ACRES) =   32.25
 UNIT-HYDROGRAPH DATA:
 RAINFALL(INCH): 5M= 0.45;30M= 0.91;1H= 1.20;3H= 1.94;6H= 2.63;24H= 5.73
 S-GRAPH: VALLEY(DEV.)= 79.1%;VALLEY(UNDEV.)/DESERT= 20.9%
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
 Tc(HR) = 1.06; LAG(HR) = 0.85; Fm(INCH/HR) = 0.45; Ybar = 0.47
 USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
 DEPTH-AREA FACTORS: 5M = 0.58; 30M = 0.60; 1HR = 0.61;
 3HR = 0.91; 6HR = 0.96; 24HR= 0.97
 UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  15593.30
 LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21649.00 = 63482.38 FEET.
  EQUIVALENT BASIN FACTOR APPROXIMATIONS:
  Lca/L=0.3,n=.0226; Lca/L=0.4,n=.0203; Lca/L=0.5,n=.0186;Lca/L=0.6,n=.0174
 TIME OF PEAK FLOW(HR) = 16.92  RUNOFF VOLUME(AF) =    3958.36
 UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   7795.23
 TOTAL AREA(ACRES) =  15593.30       PEAK FLOW RATE(CFS) =    7951.89
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
 FLOW PROCESS FROM NODE LR021649.0 TO NODE LR021649.0 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 PEAK FLOW RATE(CFS) =    7951.89    Tc(MIN.) =  63.90
 AREA-AVERAGED Fm(INCH/HR) =  0.45   Ybar = 0.47
 TOTAL AREA(ACRES) =   15593.30

****************************************************************************
 FLOW PROCESS FROM NODE LR021630.0 TO NODE LR021631.0 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   870.00
 ELEVATION DATA: UPSTREAM(FEET) =   1072.00  DOWNSTREAM(FEET) =   1071.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   21.706
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.301
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"      B        8.40      0.75      0.40    56   21.71
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
 SUBAREA RUNOFF(CFS) =     15.13
 TOTAL AREA(ACRES) =      8.40   PEAK FLOW RATE(CFS) =     15.13
```

```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 2.96

****************************************************************************
  FLOW PROCESS FROM NODE LR021631.0 TO NODE LR021632.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1071.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1068.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   204.53
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.252
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        7.91      0.75      0.40    56
  MOBILE HOME PARK           B        6.40      0.75      0.25    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.07      0.75      0.90    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.28      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.41
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     29.72
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.32
  AVERAGE FLOW DEPTH(FEET) =   0.65   FLOOD WIDTH(FEET) =   38.32
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.79   Tc(MIN.) =  22.50
  SUBAREA AREA(ACRES) =   16.66       SUBAREA RUNOFF(CFS) =   29.21
  EFFECTIVE AREA(ACRES) =   25.06     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.75  AREA-AVERAGED Ap =   0.40
  TOTAL AREA(ACRES) =     25.06         PEAK FLOW RATE(CFS) =      43.97

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 3.04

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.71   FLOOD WIDTH(FEET) =   45.79
  FLOW VELOCITY(FEET/SEC.) =   4.61   DEPTH*VELOCITY(FT*FT/SEC) =   3.29
  LONGEST FLOWPATH FROM NODE  21630.00 TO NODE  21632.00 =  1074.53 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021632.0 TO NODE LR021633.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1068.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1065.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   305.50
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
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  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.181
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B       13.68      0.75      0.40    56
  MOBILE HOME PARK           B        2.18      0.75      0.25    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.97      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.44
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     58.85
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.16
  AVERAGE FLOW DEPTH(FEET) =   0.80   FLOOD WIDTH(FEET) =   56.39
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   1.22   Tc(MIN.) =  23.72
  SUBAREA AREA(ACRES) =   17.83       SUBAREA RUNOFF(CFS) =   29.76
  EFFECTIVE AREA(ACRES) =   42.89     AREA-AVERAGED Fm(INCH/HR) =   0.31
  AREA-AVERAGED Fp(INCH/HR) =   0.75  AREA-AVERAGED Ap =   0.42
  TOTAL AREA(ACRES) =     42.89         PEAK FLOW RATE(CFS) =      72.14

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.85   FLOOD WIDTH(FEET) =   61.32
  FLOW VELOCITY(FEET/SEC.) =   4.34   DEPTH*VELOCITY(FT*FT/SEC) =   3.67
  LONGEST FLOWPATH FROM NODE  21630.00 TO NODE  21633.00 =  1380.03 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021633.0 TO NODE LR021634.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1065.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1061.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   335.83
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.121
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B       15.81      0.75      0.40    56
  MOBILE HOME PARK           B        0.95      0.75      0.25    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.21      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.45
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     87.37
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.88
  AVERAGE FLOW DEPTH(FEET) =   0.87   FLOOD WIDTH(FEET) =   63.71
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   1.15   Tc(MIN.) =  24.87
  SUBAREA AREA(ACRES) =   18.97       SUBAREA RUNOFF(CFS) =   30.45
  EFFECTIVE AREA(ACRES) =   61.86     AREA-AVERAGED Fm(INCH/HR) =   0.32
  AREA-AVERAGED Fp(INCH/HR) =   0.75  AREA-AVERAGED Ap =   0.43
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  TOTAL AREA(ACRES) =     61.86         PEAK FLOW RATE(CFS) =     100.24

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.90   FLOOD WIDTH(FEET) =   67.30
  FLOW VELOCITY(FEET/SEC.) =   5.04   DEPTH*VELOCITY(FT*FT/SEC) =   4.52
  LONGEST FLOWPATH FROM NODE  21630.00 TO NODE  21634.00 =  1715.86 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021634.0 TO NODE LR021635.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1061.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1060.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   277.53
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.065
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"       B       13.91      0.75      0.40    56
  MOBILE HOME PARK            B        0.62      0.75      0.25    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"          B        1.57      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.44
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    112.81
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.11
  AVERAGE FLOW DEPTH(FEET) =   1.00   FLOOD WIDTH(FEET) =   79.47
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   1.13   Tc(MIN.) =  25.99
  SUBAREA AREA(ACRES) =   16.10       SUBAREA RUNOFF(CFS) =   25.12
  EFFECTIVE AREA(ACRES) =   77.96     AREA-AVERAGED Fm(INCH/HR) =   0.32
  AREA-AVERAGED Fp(INCH/HR) =   0.75  AREA-AVERAGED Ap =   0.43
  TOTAL AREA(ACRES) =     77.96         PEAK FLOW RATE(CFS) =     122.26

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75
  ** PIPE SIZED TO MAXIMIZE V-GUTTER FLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.50
  PIPE-FLOW(CFS) =     45.70
  PIPEFLOW TRAVEL TIME(MIN.) =   0.84    Tc(MIN.) =  25.71
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.079
  SUBAREA AREA(ACRES) =   16.10      SUBAREA RUNOFF(CFS) =   25.32
  EFFECTIVE AREA(ACRES) =   77.96    AREA-AVERAGED Fm(INCH/HR) =  0.32
  AREA-AVERAGED Fp(INCH/HR) =  0.62  AREA-AVERAGED Ap =  0.52
  TOTAL AREA(ACRES) =     77.96        PEAK FLOW RATE(CFS) =    123.23
  V-GUTTER HYDRAULICS BASED ON MAINLINE Tc :
  V-GUTTER HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   77.53
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  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.98   FLOOD WIDTH(FEET) =   77.16
  FLOW VELOCITY(FEET/SEC.) =   2.99   DEPTH*VELOCITY(FT*FT/SEC) =   2.93
  LONGEST FLOWPATH FROM NODE  21630.00 TO NODE  21635.00 =  1993.39 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021635.0 TO NODE LR021636.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1060.00  DOWNSTREAM ELEVATION(FEET) = 1057.00
  STREET LENGTH(FEET) =   680.40   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     150.64
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.05
    HALFSTREET FLOOD WIDTH(FEET) =   45.42
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.59
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.76
  STREET FLOW TRAVEL TIME(MIN.) =   3.16   Tc(MIN.) =  29.15
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.927
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK            B        6.22      0.75      0.25    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"       B       30.75      0.75      0.40    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.37
  SUBAREA AREA(ACRES) =   36.97      SUBAREA RUNOFF(CFS) =   54.81
  EFFECTIVE AREA(ACRES) =    114.93    AREA-AVERAGED Fm(INCH/HR) =  0.31
  AREA-AVERAGED Fp(INCH/HR) =  0.65  AREA-AVERAGED Ap =  0.47
  TOTAL AREA(ACRES) =    114.93        PEAK FLOW RATE(CFS) =     167.43

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.09   HALFSTREET FLOOD WIDTH(FEET) =  47.37
  FLOW VELOCITY(FEET/SEC.) =  3.67   DEPTH*VELOCITY(FT*FT/SEC.) =   3.99

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
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  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.99
  PIPE-FLOW(CFS) =     87.95
  PIPEFLOW TRAVEL TIME(MIN.) =   1.62    Tc(MIN.) =  27.61
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.991
  SUBAREA AREA(ACRES) =   36.97      SUBAREA RUNOFF(CFS) =   56.93
  TOTAL AREA(ACRES) =    114.93        PEAK FLOW RATE(CFS) =    174.02

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   86.07
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.87
    HALFSTREET FLOOD WIDTH(FEET) =   36.39
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.16
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.74
  LONGEST FLOWPATH FROM NODE  21630.00 TO NODE  21636.00 =  2673.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021636.0 TO NODE LR021637.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1057.00  DOWNSTREAM ELEVATION(FEET) = 1052.00
  STREET LENGTH(FEET) =   615.48   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     177.52
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.00
    HALFSTREET FLOOD WIDTH(FEET) =   42.92
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.73
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.72
  STREET FLOW TRAVEL TIME(MIN.) =   2.17   Tc(MIN.) =  29.78
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.903
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        4.85      0.75      0.40    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
  SUBAREA AREA(ACRES) =    4.85      SUBAREA RUNOFF(CFS) =    7.00
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  EFFECTIVE AREA(ACRES) =    119.78    AREA-AVERAGED Fm(INCH/HR) =  0.31
  AREA-AVERAGED Fp(INCH/HR) =  0.65  AREA-AVERAGED Ap =  0.47
  TOTAL AREA(ACRES) =    119.78        PEAK FLOW RATE(CFS) =     174.02
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.99   HALFSTREET FLOOD WIDTH(FEET) =  42.61
  FLOW VELOCITY(FEET/SEC.) =  4.70   DEPTH*VELOCITY(FT*FT/SEC.) =   4.66

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.09
  PIPE-FLOW(CFS) =    100.50
  PIPEFLOW TRAVEL TIME(MIN.) =   1.13    Tc(MIN.) =  28.74
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.944
  SUBAREA AREA(ACRES) =    4.85      SUBAREA RUNOFF(CFS) =    7.18
  TOTAL AREA(ACRES) =    119.78        PEAK FLOW RATE(CFS) =    176.31

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   75.81
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.75
    HALFSTREET FLOOD WIDTH(FEET) =   30.65
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.88
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.92
  LONGEST FLOWPATH FROM NODE  21630.00 TO NODE  21637.00 =  3289.27 FEET.

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  FLOW PROCESS FROM NODE LR021637.0 TO NODE LR021649.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1052.00  DOWNSTREAM ELEVATION(FEET) = 1051.00
  STREET LENGTH(FEET) =  2286.91   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     176.31
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  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  1.61
  HALFSTREET FLOOD WIDTH(FEET) =   79.08
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.51
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.42
 STREET FLOW TRAVEL TIME(MIN.) =  25.30   Tc(MIN.) =  54.04
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.331
 SUBAREA AREA(ACRES) =    0.00      SUBAREA RUNOFF(CFS) =    0.00
 EFFECTIVE AREA(ACRES) =    119.78    AREA-AVERAGED Fm(INCH/HR) =  0.31
 AREA-AVERAGED Fp(INCH/HR) =  0.65  AREA-AVERAGED Ap =  0.47
 TOTAL AREA(ACRES) =    119.78        PEAK FLOW RATE(CFS) =     176.31
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 3.03

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 1.61   HALFSTREET FLOOD WIDTH(FEET) =  79.08
 FLOW VELOCITY(FEET/SEC.) =  1.51   DEPTH*VELOCITY(FT*FT/SEC.) =   2.42

 *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
        THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 1.07
 SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
 ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
 ESTIMATED PIPE DIAMETER(INCH) =  87.00    NUMBER OF PIPES =   1
 ASSUME FULL-FLOWING PIPELINE
 PIPE-FLOW VELOCITY(FEET/SEC.) =   3.27
 PIPE-FLOW(CFS) =    135.28
 PIPEFLOW TRAVEL TIME(MIN.) =  11.64    Tc(MIN.) =  40.38
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.585
 SUBAREA AREA(ACRES) =    0.00      SUBAREA RUNOFF(CFS) =    0.00
 TOTAL AREA(ACRES) =    119.78        PEAK FLOW RATE(CFS) =    176.31
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.24; 6HR = 1.57; 24HR = 3.03
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   41.03
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  1.01
  HALFSTREET FLOOD WIDTH(FEET) =   48.99
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.03
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.03
 LONGEST FLOWPATH FROM NODE  21630.00 TO NODE  21649.00 =  5576.18 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021649.0 TO NODE LR021649.0 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  40.38
 RAINFALL INTENSITY(INCH/HR) =   1.59
 AREA-AVERAGED Fm(INCH/HR) =  0.31
 AREA-AVERAGED Fp(INCH/HR) =  0.65
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 AREA-AVERAGED Ap =  0.47
 EFFECTIVE STREAM AREA(ACRES) =   119.78
 TOTAL STREAM AREA(ACRES) =   119.78
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    176.31

****************************************************************************
 FLOW PROCESS FROM NODE LR021640.0 TO NODE LR021641.0 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   905.18
 ELEVATION DATA: UPSTREAM(FEET) =   1069.00  DOWNSTREAM(FEET) =   1065.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.693
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.033
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                 B        7.30      0.75      0.10    56   13.69
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
 SUBAREA RUNOFF(CFS) =     19.44
 TOTAL AREA(ACRES) =      7.30   PEAK FLOW RATE(CFS) =     19.44

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
 FLOW PROCESS FROM NODE LR021641.0 TO NODE LR021642.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1065.00  DOWNSTREAM ELEVATION(FEET) = 1061.00
 STREET LENGTH(FEET) =   479.84   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 32.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      30.41
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.61
  HALFSTREET FLOOD WIDTH(FEET) =   22.82
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.82
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.73
 STREET FLOW TRAVEL TIME(MIN.) =   2.84   Tc(MIN.) =  16.53
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.709
 SUBAREA LOSS RATE DATA(AMC  II):
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 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
COMMERCIAL                 B        9.25      0.75      0.10    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
SUBAREA AREA(ACRES) =    9.25      SUBAREA RUNOFF(CFS) =   21.93
EFFECTIVE AREA(ACRES) =     16.55    AREA-AVERAGED Fm(INCH/HR) =  0.07
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.10
TOTAL AREA(ACRES) =     16.55        PEAK FLOW RATE(CFS) =      39.24

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.66   HALFSTREET FLOOD WIDTH(FEET) =  25.16
FLOW VELOCITY(FEET/SEC.) =  3.01   DEPTH*VELOCITY(FT*FT/SEC.) =   1.99
LONGEST FLOWPATH FROM NODE  21640.00 TO NODE  21642.00 =  1385.02 FEET.

****************************************************************************
FLOW PROCESS FROM NODE LR021642.0 TO NODE LR021643.0 IS CODE =  63
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 1061.00  DOWNSTREAM ELEVATION(FEET) = 1059.00
STREET LENGTH(FEET) =   183.00   CURB HEIGHT(INCHES) =  8.0
STREET HALFWIDTH(FEET) = 32.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      44.82
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.66
  HALFSTREET FLOOD WIDTH(FEET) =   25.16
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.44
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.27
STREET FLOW TRAVEL TIME(MIN.) =   0.89   Tc(MIN.) =  17.42
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.625
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
COMMERCIAL                 B        4.86      0.75      0.10    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
SUBAREA AREA(ACRES) =    4.86      SUBAREA RUNOFF(CFS) =   11.16
EFFECTIVE AREA(ACRES) =     21.41    AREA-AVERAGED Fm(INCH/HR) =  0.07
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.10
TOTAL AREA(ACRES) =     21.41        PEAK FLOW RATE(CFS) =      49.15

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
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5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.68   HALFSTREET FLOOD WIDTH(FEET) =  26.63
FLOW VELOCITY(FEET/SEC.) =  3.53   DEPTH*VELOCITY(FT*FT/SEC.) =   2.39
LONGEST FLOWPATH FROM NODE  21640.00 TO NODE  21643.00 =  1568.02 FEET.

****************************************************************************
FLOW PROCESS FROM NODE LR021643.0 TO NODE LR021644.0 IS CODE =  63
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 1059.00  DOWNSTREAM ELEVATION(FEET) = 1057.00
STREET LENGTH(FEET) =   213.50   CURB HEIGHT(INCHES) =  8.0
STREET HALFWIDTH(FEET) = 32.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      55.86
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.72
  HALFSTREET FLOOD WIDTH(FEET) =   31.00
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.40
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.45
STREET FLOW TRAVEL TIME(MIN.) =   1.05   Tc(MIN.) =  18.47
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.535
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
COMMERCIAL                 B        6.06      0.75      0.10    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
SUBAREA AREA(ACRES) =    6.06      SUBAREA RUNOFF(CFS) =   13.42
EFFECTIVE AREA(ACRES) =     27.47    AREA-AVERAGED Fm(INCH/HR) =  0.07
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.10
TOTAL AREA(ACRES) =     27.47        PEAK FLOW RATE(CFS) =      60.82

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.74   HALFSTREET FLOOD WIDTH(FEET) =  32.72
FLOW VELOCITY(FEET/SEC.) =  3.47   DEPTH*VELOCITY(FT*FT/SEC.) =   2.56
LONGEST FLOWPATH FROM NODE  21640.00 TO NODE  21644.00 =  1781.52 FEET.

****************************************************************************
FLOW PROCESS FROM NODE LR021644.0 TO NODE LR021645.0 IS CODE =  63
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
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  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) = 1057.00  DOWNSTREAM ELEVATION(FEET) = 1055.00
  STREET LENGTH(FEET) =   205.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      66.99
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.76
    HALFSTREET FLOOD WIDTH(FEET) =   34.44
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.58
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.71
  STREET FLOW TRAVEL TIME(MIN.) =   0.95   Tc(MIN.) =  19.42
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.459
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                B        5.75      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
  SUBAREA AREA(ACRES) =    5.75      SUBAREA RUNOFF(CFS) =   12.34
  EFFECTIVE AREA(ACRES) =     33.22    AREA-AVERAGED Fm(INCH/HR) =  0.07
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.10
  TOTAL AREA(ACRES) =     33.22        PEAK FLOW RATE(CFS) =      71.30

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.77   HALFSTREET FLOOD WIDTH(FEET) =  35.85
  FLOW VELOCITY(FEET/SEC.) =  3.62   DEPTH*VELOCITY(FT*FT/SEC.) =   2.79
  LONGEST FLOWPATH FROM NODE  21640.00 TO NODE  21645.00 =  1986.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021645.0 TO NODE LR021646.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) = 1055.00  DOWNSTREAM ELEVATION(FEET) = 1053.00
  STREET LENGTH(FEET) =   420.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
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  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      82.80
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.88
    HALFSTREET FLOOD WIDTH(FEET) =   42.64
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.92
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.57
  STREET FLOW TRAVEL TIME(MIN.) =   2.40   Tc(MIN.) =  21.82
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.294
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                B       11.52      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
  SUBAREA AREA(ACRES) =   11.52      SUBAREA RUNOFF(CFS) =   23.00
  EFFECTIVE AREA(ACRES) =     44.74    AREA-AVERAGED Fm(INCH/HR) =  0.07
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.10
  TOTAL AREA(ACRES) =     44.74        PEAK FLOW RATE(CFS) =      89.34

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.90   HALFSTREET FLOOD WIDTH(FEET) =  43.49
  FLOW VELOCITY(FEET/SEC.) =  3.00   DEPTH*VELOCITY(FT*FT/SEC.) =   2.69
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  420.5 FT WITH ELEVATION-DROP =   2.0 FT, IS   37.4 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21646.00
  LONGEST FLOWPATH FROM NODE  21640.00 TO NODE  21646.00 =  2407.02 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021646.0 TO NODE LR021647.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) = 1053.00  DOWNSTREAM ELEVATION(FEET) = 1052.00
  STREET LENGTH(FEET) =   290.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      97.08
    ***STREET FLOWING FULL***
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    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.96
    HALFSTREET FLOOD WIDTH(FEET) =   46.61
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.74
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.63
  STREET FLOW TRAVEL TIME(MIN.) =   1.76   Tc(MIN.) =  23.58
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.189
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        8.13      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
  SUBAREA AREA(ACRES) =    8.13      SUBAREA RUNOFF(CFS) =   15.47
  EFFECTIVE AREA(ACRES) =     52.87    AREA-AVERAGED Fm(INCH/HR) =  0.07
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.10
  TOTAL AREA(ACRES) =     52.87        PEAK FLOW RATE(CFS) =     100.61

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.97   HALFSTREET FLOOD WIDTH(FEET) =  47.09
  FLOW VELOCITY(FEET/SEC.) =  2.77   DEPTH*VELOCITY(FT*FT/SEC.) =   2.68
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  290.0 FT WITH ELEVATION-DROP =   1.0 FT, IS   27.8 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21647.00
  LONGEST FLOWPATH FROM NODE  21640.00 TO NODE  21647.00 =  2697.02 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021647.0 TO NODE LR021648.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1052.00  DOWNSTREAM ELEVATION(FEET) = 1051.50
  STREET LENGTH(FEET) =   382.94   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     111.89
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.17
    HALFSTREET FLOOD WIDTH(FEET) =   51.40
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.09
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.44
  STREET FLOW TRAVEL TIME(MIN.) =   3.06   Tc(MIN.) =  26.64
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.035
```



```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       11.59      0.75      0.10    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.73      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.20
  SUBAREA AREA(ACRES) =   13.32      SUBAREA RUNOFF(CFS) =   22.56
  EFFECTIVE AREA(ACRES) =     66.19    AREA-AVERAGED Fm(INCH/HR) =  0.09
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.12
  TOTAL AREA(ACRES) =     66.19        PEAK FLOW RATE(CFS) =     115.83

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.18   HALFSTREET FLOOD WIDTH(FEET) =  52.07
  FLOW VELOCITY(FEET/SEC.) =  2.11   DEPTH*VELOCITY(FT*FT/SEC.) =   2.49

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.27
  PIPE-FLOW(CFS) =     75.68
  PIPEFLOW TRAVEL TIME(MIN.) =   1.50    Tc(MIN.) =  25.08
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.110
  SUBAREA AREA(ACRES) =   13.32      SUBAREA RUNOFF(CFS) =   23.46
  TOTAL AREA(ACRES) =     66.19        PEAK FLOW RATE(CFS) =    120.30

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   44.61
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.85
    HALFSTREET FLOOD WIDTH(FEET) =   35.65
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.71
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.46
  LONGEST FLOWPATH FROM NODE  21640.00 TO NODE  21648.00 =  3079.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021648.0 TO NODE LR021649.0 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1051.50  DOWNSTREAM(FEET) =  1051.00
  FLOW LENGTH(FEET) =   173.09   MANNING'S N =  0.013
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  45.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.47
  ESTIMATED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    120.30
  PIPE TRAVEL TIME(MIN.) =   0.39    Tc(MIN.) =  25.46
```

```
  LONGEST FLOWPATH FROM NODE  21640.00 TO NODE  21649.00 =  3253.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021649.0 TO NODE LR021649.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =  25.46
  RAINFALL INTENSITY(INCH/HR) =   2.09
  AREA-AVERAGED Fm(INCH/HR) =  0.09
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.12
  EFFECTIVE STREAM AREA(ACRES) =    66.19
  TOTAL STREAM AREA(ACRES) =    66.19
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    120.30
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1      7951.89   63.90    15593.30  LR020120.0
     2       176.31   40.38      119.78  LR021630.0
     3       120.30   25.46       66.19  LR021640.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.91;1H= 1.20;3H= 1.94;6H= 2.62;24H= 5.71
  S-GRAPH: VALLEY(DEV.)= 79.3%;VALLEY(UNDEV.)/DESERT= 20.7%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 1.06; LAG(HR) = 0.85; Fm(INCH/HR) = 0.45; Ybar = 0.47
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.57; 30M = 0.60; 1HR = 0.61;
  3HR = 0.91; 6HR = 0.96; 24HR= 0.97
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  15779.27
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21649.00 = 63482.38 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0226; Lca/L=0.4,n=.0203; Lca/L=0.5,n=.0186;Lca/L=0.6,n=.0174
  TIME OF PEAK FLOW(HR) = 16.92  RUNOFF VOLUME(AF) =    4007.43
  PEAK FLOW RATE(CFS) =   7873.85
    (UPSTREAM NODE PEAK FLOW RATE(CFS) =   7951.89)
  PEAK FLOW RATE(CFS) USED =   7951.89

****************************************************************************
  FLOW PROCESS FROM NODE LR021649.0 TO NODE LR021650.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1051.00  DOWNSTREAM(FEET) =   1040.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1609.00   CHANNEL SLOPE =  0.0068
  CHANNEL BASE(FEET) =   22.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =  11.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   7951.89
  FLOW VELOCITY(FEET/SEC.) =  25.16   FLOW DEPTH(FEET) =   8.22
  TRAVEL TIME(MIN.) =   1.07   Tc(MIN.) =  64.96
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21650.00 = 65091.38 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR021650.0 TO NODE LR021650.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  64.96
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.192
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       55.41      0.75       0.90    56
  COMMERCIAL                 B        8.21      0.75       0.10    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.13      0.75       0.40    56
  SCHOOL                     B        0.17      0.75       0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.80
  SUBAREA AREA(ACRES) =   63.92
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.91;1H= 1.20;3H= 1.94;6H= 2.62;24H= 5.71
  S-GRAPH: VALLEY(DEV.)= 79.0%;VALLEY(UNDEV.)/DESERT= 21.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 1.08; LAG(HR) = 0.87; Fm(INCH/HR) = 0.45; Ybar = 0.47
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.57; 30M = 0.60; 1HR = 0.61;
  3HR = 0.91; 6HR = 0.96; 24HR= 0.97
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  15843.19
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21650.00 = 65091.38 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0225; Lca/L=0.4,n=.0201; Lca/L=0.5,n=.0185;Lca/L=0.6,n=.0173
  TIME OF PEAK FLOW(HR) = 16.92  RUNOFF VOLUME(AF) =    4015.18
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   7877.80
  TOTAL AREA(ACRES) =  15843.19       PEAK FLOW RATE(CFS) =    7951.89
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75

****************************************************************************
  FLOW PROCESS FROM NODE LR021650.0 TO NODE LR021651.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1040.00  DOWNSTREAM(FEET) =   1020.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1766.25   CHANNEL SLOPE =  0.0113
  CHANNEL BASE(FEET) =   22.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =  11.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   7951.89
  FLOW VELOCITY(FEET/SEC.) =  30.21   FLOW DEPTH(FEET) =   7.22
  TRAVEL TIME(MIN.) =   0.97   Tc(MIN.) =  65.94
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21651.00 = 66857.62 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021651.0 TO NODE LR021651.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
```

```
================================================================================
  MAINLINE Tc(MIN) =  65.94
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.181
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       17.50      0.75      0.10    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        8.34      0.61      1.00    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       56.16      0.75      0.90    56
  SCHOOL                     B        0.36      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.73
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.74
  SUBAREA AREA(ACRES) =   82.36
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.91;1H= 1.20;3H= 1.94;6H= 2.62;24H= 5.71
  S-GRAPH: VALLEY(DEV.)= 78.7%;VALLEY(UNDEV.)/DESERT= 21.3%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 1.10; LAG(HR) = 0.88; Fm(INCH/HR) = 0.45; Ybar = 0.47
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.57; 30M = 0.60; 1HR = 0.61;
  3HR = 0.91; 6HR = 0.96; 24HR= 0.97
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  15925.55
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21651.00 = 66857.62 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0223; Lca/L=0.4,n=.0200; Lca/L=0.5,n=.0183;Lca/L=0.6,n=.0171
  TIME OF PEAK FLOW(HR) = 16.92  RUNOFF VOLUME(AF) =    4027.19
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   7849.72
  TOTAL AREA(ACRES) =  15925.55       PEAK FLOW RATE(CFS) =    7951.89
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 1.79; 6HR = 2.25; 24HR = 4.75
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =  15925.55  TC(MIN.) =     65.94
  AREA-AVERAGED Fm(INCH/HR)=  0.45   Ybar =  0.47
  PEAK FLOW RATE(CFS)   =   7951.89
================================================================================
================================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
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                          Analysis prepared by:

                          San Bernardino County
                    Transportation/ Flood Control Department

                          Water Resources Division

 ************************ DESCRIPTION OF STUDY *************************
* LR 0201ZZ FILE                                                       *
*  25-YEAR STORM                                                       *
*                                                                      *
 ************************************************************************

  FILE NAME: LR0201ZZ.Z25
  TIME/DATE OF STUDY: 11:26 02/23/2006
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.0300

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
```



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 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


 ************************************************************************
  FLOW PROCESS FROM NODE LR020100.0 TO NODE LR020101.0 IS CODE =  21
 ------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   219.52
  ELEVATION DATA: UPSTREAM(FEET) =   2400.00  DOWNSTREAM(FEET) =   2385.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.474
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.918
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.33      0.61      1.00    66   10.43
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        0.04      0.86      1.00    46   10.43
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.55      0.75      0.70    56    6.47
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.80
  SUBAREA RUNOFF(CFS) =     11.85
  TOTAL AREA(ACRES) =      3.92   PEAK FLOW RATE(CFS) =     11.85

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.38; 30M = 0.78; 1HR = 1.03; 3HR = 1.91; 6HR = 2.83; 24HR = 6.12

 ************************************************************************
  FLOW PROCESS FROM NODE LR020101.0 TO NODE LR020102.0 IS CODE =  63
 ------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
========================================================================
  UPSTREAM ELEVATION(FEET) = 2385.00  DOWNSTREAM ELEVATION(FEET) = 2340.00
```

```
  STREET LENGTH(FEET) =   138.73   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.45

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      18.25
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.30
    HALFSTREET FLOOD WIDTH(FEET) =    8.90
    AVERAGE FLOW VELOCITY(FEET/SEC.) =   10.03
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.05
  STREET FLOW TRAVEL TIME(MIN.) =   0.23   Tc(MIN.) =   6.70
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.836
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        0.45      0.86      1.00    46
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        0.90      0.61      1.00    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        3.01      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.73
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.79
  SUBAREA AREA(ACRES) =    4.36      SUBAREA RUNOFF(CFS) =   12.79
  EFFECTIVE AREA(ACRES) =      8.28    AREA-AVERAGED Fm(INCH/HR) =  0.57
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =      8.28        PEAK FLOW RATE(CFS) =      24.36

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.38; 30M = 0.78; 1HR = 1.03; 3HR = 1.91; 6HR = 2.83; 24HR = 6.12

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =  10.07
  FLOW VELOCITY(FEET/SEC.) = 10.76   DEPTH*VELOCITY(FT*FT/SEC.) =   3.52
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20102.00 =   358.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020102.0 TO NODE LR020103.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2340.00  DOWNSTREAM ELEVATION(FEET) = 2320.00
  STREET LENGTH(FEET) =   287.27   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
```



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  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.64

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      33.51
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.44
    HALFSTREET FLOOD WIDTH(FEET) =   15.77
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.43
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.84
  STREET FLOW TRAVEL TIME(MIN.) =   0.74   Tc(MIN.) =   7.45
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.601
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        1.17      0.86      1.00    46
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        2.63      0.61      1.00    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        3.01      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.71
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.87
  SUBAREA AREA(ACRES) =    6.81      SUBAREA RUNOFF(CFS) =   18.30
  EFFECTIVE AREA(ACRES) =     15.09    AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     15.09        PEAK FLOW RATE(CFS) =      40.90

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.38; 30M = 0.78; 1HR = 1.03; 3HR = 1.91; 6HR = 2.83; 24HR = 6.12

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.47   HALFSTREET FLOOD WIDTH(FEET) =  17.10
  FLOW VELOCITY(FEET/SEC.) =  6.72   DEPTH*VELOCITY(FT*FT/SEC.) =   3.15
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20103.00 =   645.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020103.0 TO NODE LR020104.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2320.00  DOWNSTREAM ELEVATION(FEET) = 2310.00
  STREET LENGTH(FEET) =   249.70   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.74
```

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  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      76.68
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.59
  HALFSTREET FLOOD WIDTH(FEET) =   22.71
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.94
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.12
 STREET FLOW TRAVEL TIME(MIN.) =   0.60   Tc(MIN.) =   8.05
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.438
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               A        1.82      0.86      1.00    46
 NATURAL FAIR COVER
 "OPEN BRUSH"               B       19.46      0.61      1.00    66
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        6.79      0.75      0.70    56
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         A        0.01      0.98      0.70    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.66
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.93
 SUBAREA AREA(ACRES) =   28.08      SUBAREA RUNOFF(CFS) =   71.52
 EFFECTIVE AREA(ACRES) =     43.17    AREA-AVERAGED Fm(INCH/HR) =  0.60
 AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.89
 TOTAL AREA(ACRES) =     43.17        PEAK FLOW RATE(CFS) =     110.20

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.38; 30M = 0.78; 1HR = 1.03; 3HR = 1.91; 6HR = 2.83; 24HR = 6.12

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.66   HALFSTREET FLOOD WIDTH(FEET) =  26.01
 FLOW VELOCITY(FEET/SEC.) =  7.73   DEPTH*VELOCITY(FT*FT/SEC.) =   5.10
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  249.7 FT WITH ELEVATION-DROP =  10.0 FT, IS   74.7 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20104.00
 LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20104.00 =   895.22 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020104.0 TO NODE LR020105.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2310.00  DOWNSTREAM ELEVATION(FEET) = 2270.00
 STREET LENGTH(FEET) =   747.57   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.69
```



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  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     172.75
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.73
  HALFSTREET FLOOD WIDTH(FEET) =   29.31
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.65
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.00
 STREET FLOW TRAVEL TIME(MIN.) =   1.29   Tc(MIN.) =   9.34
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.144
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               A        5.68      0.86      1.00    46
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         A        3.92      0.98      0.70    32
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        6.10      0.75      0.70    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B       39.60      0.61      1.00    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.95
 SUBAREA AREA(ACRES) =   55.30      SUBAREA RUNOFF(CFS) =  124.93
 EFFECTIVE AREA(ACRES) =     98.47    AREA-AVERAGED Fm(INCH/HR) =  0.62
 AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     98.47        PEAK FLOW RATE(CFS) =     223.71

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.38; 30M = 0.78; 1HR = 1.03; 3HR = 1.91; 6HR = 2.83; 24HR = 6.12

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.79   HALFSTREET FLOOD WIDTH(FEET) =  32.42
 FLOW VELOCITY(FEET/SEC.) = 10.29   DEPTH*VELOCITY(FT*FT/SEC.) =   8.11

 *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
        THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.69
 SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
 ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
 ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
 DEPTH OF FLOW IN  33.0 INCH PIPE IS  26.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  21.64
 PIPE-FLOW(CFS) =    110.20
 PIPEFLOW TRAVEL TIME(MIN.) =   0.58    Tc(MIN.) =   8.62
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.298
 SUBAREA AREA(ACRES) =   55.30      SUBAREA RUNOFF(CFS) =  132.60
 TOTAL AREA(ACRES) =     98.47        PEAK FLOW RATE(CFS) =    237.37

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.38; 30M = 0.78; 1HR = 1.03; 3HR = 1.91; 6HR = 2.83; 24HR = 6.12
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  127.17
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.66
  HALFSTREET FLOOD WIDTH(FEET) =   26.01
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.92
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.89
```

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 LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20105.00 =  1642.79 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020105.0 TO NODE LR020106.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   2270.00  DOWNSTREAM(FEET) =   2230.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1238.14   CHANNEL SLOPE =  0.0323
 CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   3.30
 CHANNEL FLOW THRU SUBAREA(CFS) =    237.37
 FLOW VELOCITY(FEET/SEC.) =  10.01   FLOW DEPTH(FEET) =   2.41
 TRAVEL TIME(MIN.) =   2.06   Tc(MIN.) =  10.69
 LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20106.00 =  2880.93 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020106.0 TO NODE LR020106.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  10.69
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.900
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               A        2.42      0.86      1.00    46
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         A        7.44      0.98      0.70    32
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B       21.25      0.75      0.70    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B      127.72      0.61      1.00    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.64
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.95
 SUBAREA AREA(ACRES) =  158.83      SUBAREA RUNOFF(CFS) =  327.54
 EFFECTIVE AREA(ACRES) =    257.30   AREA-AVERAGED Fm(INCH/HR) =  0.61
 AREA-AVERAGED Fp(INCH/HR) =  0.65  AREA-AVERAGED Ap =  0.94
 TOTAL AREA(ACRES) =    257.30       PEAK FLOW RATE(CFS) =     529.63

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.38; 30M = 0.78; 1HR = 1.03; 3HR = 1.91; 6HR = 2.83; 24HR = 6.12

****************************************************************************
 FLOW PROCESS FROM NODE LR020106.0 TO NODE LR020107.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   2230.00  DOWNSTREAM(FEET) =   2170.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1330.76   CHANNEL SLOPE =  0.0451
 CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
 CHANNEL FLOW THRU SUBAREA(CFS) =    529.63
 FLOW VELOCITY(FEET/SEC.) =  10.89   FLOW DEPTH(FEET) =   1.48
 TRAVEL TIME(MIN.) =   2.04   Tc(MIN.) =  12.72
```



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 LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20107.00 =  4211.69 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020107.0 TO NODE LR020107.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  12.72
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.612
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               A        2.55      0.86      1.00    46
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         A       12.67      0.98      0.70    32
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B       10.30      0.75      0.70    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B       66.90      0.61      1.00    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.93
 SUBAREA AREA(ACRES) =   92.42      SUBAREA RUNOFF(CFS) =  165.69
 EFFECTIVE AREA(ACRES) =    349.72   AREA-AVERAGED Fm(INCH/HR) =  0.61
 AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.93
 TOTAL AREA(ACRES) =    349.72       PEAK FLOW RATE(CFS) =     628.60

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.38; 30M = 0.78; 1HR = 1.03; 3HR = 1.91; 6HR = 2.83; 24HR = 6.12

****************************************************************************
 FLOW PROCESS FROM NODE LR020107.0 TO NODE LR020108.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   2170.00  DOWNSTREAM(FEET) =   2095.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1995.70   CHANNEL SLOPE =  0.0376
 CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
 CHANNEL FLOW THRU SUBAREA(CFS) =    628.60
 FLOW VELOCITY(FEET/SEC.) =  10.92   FLOW DEPTH(FEET) =   1.72
 TRAVEL TIME(MIN.) =   3.05   Tc(MIN.) =  15.77
 LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20108.00 =  6207.39 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020108.0 TO NODE LR020108.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  15.77
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.296
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               A        3.92      0.86      1.00    46
 RESIDENTIAL
```

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  "2 DWELLINGS/ACRE"         A        0.86      0.98      0.70    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       16.85      0.98      0.60    32
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       25.39      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       10.75      0.75      0.60    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       87.64      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.68
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.87
  SUBAREA AREA(ACRES) =  145.41      SUBAREA RUNOFF(CFS) =  223.36
  EFFECTIVE AREA(ACRES) =    495.13   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =    495.13       PEAK FLOW RATE(CFS) =     752.61

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.38; 30M = 0.78; 1HR = 1.03; 3HR = 1.91; 6HR = 2.83; 24HR = 6.12

****************************************************************************
  FLOW PROCESS FROM NODE LR020108.0 TO NODE LR020109.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2095.00  DOWNSTREAM(FEET) =   2020.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2023.91   CHANNEL SLOPE =  0.0371
  CHANNEL BASE(FEET) =   40.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    752.61
  FLOW VELOCITY(FEET/SEC.) =  10.67   FLOW DEPTH(FEET) =   1.63
  TRAVEL TIME(MIN.) =   3.16   Tc(MIN.) =  18.93
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20109.00 =  8231.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020109.0 TO NODE LR020109.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  18.93
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.058
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        2.81      0.86      1.00    46
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       27.06      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       26.94      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       35.77      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B      102.40      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.83
  SUBAREA AREA(ACRES) =  194.98      SUBAREA RUNOFF(CFS) =  260.41
  EFFECTIVE AREA(ACRES) =    690.11   AREA-AVERAGED Fm(INCH/HR) =  0.60
```



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  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.89
  TOTAL AREA(ACRES) =    690.11       PEAK FLOW RATE(CFS) =     906.79

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.38; 30M = 0.78; 1HR = 1.03; 3HR = 1.91; 6HR = 2.83; 24HR = 6.12

****************************************************************************
  FLOW PROCESS FROM NODE LR020109.0 TO NODE LR020109.0 IS CODE =  71
----------------------------------------------------------------------------
  >>>>>PEAK FLOW RATE ESTIMATOR CHANGED TO UNIT-HYDROGRAPH METHOD<<<<<
  >>>>>USING TIME-OF-CONCENTRATION OF LONGEST FLOWPATH<<<<<
============================================================================
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.38;30M= 0.78;1H= 1.03;3H= 1.91;6H= 2.83;24H= 6.12
  S-GRAPH: VALLEY(DEV.)= 32.0%;VALLEY(UNDEV.)/DESERT= 68.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.32; LAG(HR) = 0.25; Fm(INCH/HR) = 0.60; Ybar = 0.58
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 1.00; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    690.11
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20109.00 =  8231.30 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0337; Lca/L=0.4,n=.0302; Lca/L=0.5,n=.0277;Lca/L=0.6,n=.0259
  TIME OF PEAK FLOW(HR) = 16.25  RUNOFF VOLUME(AF) =     157.52
  UNIT-HYDROGRAPH METHOD PEAK FLOW RATE(CFS) =    826.09
  TOTAL PEAK FLOW RATE(CFS) =    826.09 (SOURCE FLOW INCLUDED)
  RATIONAL METHOD PEAK FLOW RATE(CFS) =    906.79
   (UPSTREAM NODE PEAK FLOW RATE(CFS) =    906.79)
  PEAK FLOW RATE(CFS) USED =    906.79

****************************************************************************
  FLOW PROCESS FROM NODE LR020109.0 TO NODE LR020110.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2020.00  DOWNSTREAM(FEET) =   1960.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1927.24   CHANNEL SLOPE =  0.0311
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    906.79
  FLOW VELOCITY(FEET/SEC.) =  25.20   FLOW DEPTH(FEET) =   2.42
  TRAVEL TIME(MIN.) =   1.27   Tc(MIN.) =  20.20
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20110.00 = 10158.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020110.0 TO NODE LR020110.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  20.20
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.979
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        5.83      0.86      1.00    46
```

```
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       33.80      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       25.19      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        9.84      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       45.99      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.78
  SUBAREA AREA(ACRES) =  120.65
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.38;30M= 0.78;1H= 1.03;3H= 1.91;6H= 2.83;24H= 6.12
  S-GRAPH: VALLEY(DEV.)= 35.7%;VALLEY(UNDEV.)/DESERT= 64.3%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.34; LAG(HR) = 0.27; Fm(INCH/HR) = 0.59; Ybar = 0.58
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    810.76
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20110.00 = 10158.54 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0303; Lca/L=0.4,n=.0271; Lca/L=0.5,n=.0249;Lca/L=0.6,n=.0233
  TIME OF PEAK FLOW(HR) = 16.33  RUNOFF VOLUME(AF) =     185.56
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    947.07
  TOTAL AREA(ACRES) =    810.76       PEAK FLOW RATE(CFS) =     947.07

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.38; 30M = 0.78; 1HR = 1.03; 3HR = 1.91; 6HR = 2.83; 24HR = 6.12

****************************************************************************
  FLOW PROCESS FROM NODE LR020110.0 TO NODE LR020111.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1960.00  DOWNSTREAM(FEET) =   1920.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   928.33   CHANNEL SLOPE =  0.0431
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    947.07
  FLOW VELOCITY(FEET/SEC.) =  28.59   FLOW DEPTH(FEET) =   2.28
  TRAVEL TIME(MIN.) =   0.54   Tc(MIN.) =  20.74
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20111.00 = 11086.87 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020111.0 TO NODE LR020111.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  20.74
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.948
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A       28.59      0.86      1.00    46
  RESIDENTIAL
```



```
  "3-4 DWELLINGS/ACRE"       A       31.08      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       31.56      0.75      0.60    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       41.72      0.61      1.00    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        5.26      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.76
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.81
  SUBAREA AREA(ACRES) =  138.21
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.38;30M= 0.78;1H= 1.03;3H= 1.91;6H= 2.83;24H= 6.12
  S-GRAPH: VALLEY(DEV.)= 37.1%;VALLEY(UNDEV.)/DESERT= 62.9%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.35; LAG(HR) = 0.28; Fm(INCH/HR) = 0.60; Ybar = 0.59
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    948.97
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20111.00 = 11086.87 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0291; Lca/L=0.4,n=.0261; Lca/L=0.5,n=.0240;Lca/L=0.6,n=.0224
  TIME OF PEAK FLOW(HR) = 16.33  RUNOFF VOLUME(AF) =     214.52
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1088.65
  TOTAL AREA(ACRES) =    948.97       PEAK FLOW RATE(CFS) =    1088.65

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.38; 30M = 0.78; 1HR = 1.03; 3HR = 1.91; 6HR = 2.83; 24HR = 6.12

****************************************************************************
  FLOW PROCESS FROM NODE LR020111.0 TO NODE LR020112.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1920.00  DOWNSTREAM(FEET) =   1870.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1664.97   CHANNEL SLOPE =  0.0300
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   1088.65
  FLOW VELOCITY(FEET/SEC.) =  26.21   FLOW DEPTH(FEET) =   2.70
  TRAVEL TIME(MIN.) =   1.06   Tc(MIN.) =  21.80
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20112.00 = 12751.84 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020112.0 TO NODE LR020112.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.80
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.891
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        8.51      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.54      0.75      0.60    56
```

```
  RESIDENTIAL
  ".4 DWELLING/ACRE"         A        3.29      0.98      0.90    32
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       75.85      0.75      0.90    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        7.12      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.76
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.88
  SUBAREA AREA(ACRES) =   95.31
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.38;30M= 0.78;1H= 1.03;3H= 1.91;6H= 2.83;24H= 6.12
  S-GRAPH: VALLEY(DEV.)= 34.6%;VALLEY(UNDEV.)/DESERT= 65.4%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.36; LAG(HR) = 0.29; Fm(INCH/HR) = 0.61; Ybar = 0.59
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.95; 30M = 0.95; 1HR = 0.95;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1044.28
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20112.00 = 12751.84 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0273; Lca/L=0.4,n=.0244; Lca/L=0.5,n=.0225;Lca/L=0.6,n=.0210
  TIME OF PEAK FLOW(HR) = 16.33  RUNOFF VOLUME(AF) =     232.69
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1151.33
  TOTAL AREA(ACRES) =   1044.28       PEAK FLOW RATE(CFS) =    1151.33

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.38; 30M = 0.78; 1HR = 1.03; 3HR = 1.91; 6HR = 2.83; 24HR = 6.12

****************************************************************************
  FLOW PROCESS FROM NODE LR020112.0 TO NODE LR020150.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1870.00  DOWNSTREAM(FEET) =   1850.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   907.32   CHANNEL SLOPE =  0.0220
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   1151.33
  FLOW VELOCITY(FEET/SEC.) =  23.81   FLOW DEPTH(FEET) =   3.02
  TRAVEL TIME(MIN.) =   0.64   Tc(MIN.) =  22.44
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20150.00 = 13659.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020150.0 TO NODE LR020150.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  22.44
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.858
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.19      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        3.83      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
```



```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.74
  SUBAREA AREA(ACRES) =    8.02
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.38;30M= 0.78;1H= 1.03;3H= 1.91;6H= 2.83;24H= 6.12
  S-GRAPH: VALLEY(DEV.)= 34.7%;VALLEY(UNDEV.)/DESERT= 65.3%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.37; LAG(HR) = 0.30; Fm(INCH/HR) = 0.60; Ybar = 0.59
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.95; 30M = 0.95; 1HR = 0.95;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1052.30
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20150.00 = 13659.16 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0265; Lca/L=0.4,n=.0237; Lca/L=0.5,n=.0218;Lca/L=0.6,n=.0203
  TIME OF PEAK FLOW(HR) = 16.33  RUNOFF VOLUME(AF) =     234.62
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1141.51
  TOTAL AREA(ACRES) =   1052.30       PEAK FLOW RATE(CFS) =    1151.33
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.38; 30M = 0.78; 1HR = 1.03; 3HR = 1.91; 6HR = 2.83; 24HR = 6.12

****************************************************************************
  FLOW PROCESS FROM NODE LR020150.0 TO NODE LR020150.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020120.0 TO NODE LR020121.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   591.56
  ELEVATION DATA: UPSTREAM(FEET) =   3148.00  DOWNSTREAM(FEET) =   2920.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.975
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.854
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        5.75      0.61      1.00    66   10.98
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA RUNOFF(CFS) =     11.59
  TOTAL AREA(ACRES) =      5.75   PEAK FLOW RATE(CFS) =     11.59

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.38; 30M = 0.78; 1HR = 1.03; 3HR = 1.91; 6HR = 2.83; 24HR = 6.12

****************************************************************************
  FLOW PROCESS FROM NODE LR020121.0 TO NODE LR020122.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
```

```
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2920.00  DOWNSTREAM(FEET) =   2860.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   401.18   CHANNEL SLOPE =  0.1496
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     11.59
  FLOW VELOCITY(FEET/SEC.) =   6.75   FLOW DEPTH(FEET) =   0.83
  TRAVEL TIME(MIN.) =   0.99   Tc(MIN.) =  11.97
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20122.00 =   992.74 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020122.0 TO NODE LR020122.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN) =  11.97
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.710
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        6.02      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =    6.02      SUBAREA RUNOFF(CFS) =   11.36
  EFFECTIVE AREA(ACRES) =     11.77   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     11.77       PEAK FLOW RATE(CFS) =      22.20

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.38; 30M = 0.78; 1HR = 1.03; 3HR = 1.91; 6HR = 2.83; 24HR = 6.12

****************************************************************************
  FLOW PROCESS FROM NODE LR020122.0 TO NODE LR020123.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2860.00  DOWNSTREAM(FEET) =   2800.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   404.41   CHANNEL SLOPE =  0.1484
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     22.20
  FLOW VELOCITY(FEET/SEC.) =   7.94   FLOW DEPTH(FEET) =   1.06
  TRAVEL TIME(MIN.) =   0.85   Tc(MIN.) =  12.81
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20123.00 =  1397.15 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020123.0 TO NODE LR020123.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN) =  12.81
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.601
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
```



```
  "OPEN BRUSH"                B        5.11      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =    5.11      SUBAREA RUNOFF(CFS) =    9.14
  EFFECTIVE AREA(ACRES) =     16.88   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     16.88       PEAK FLOW RATE(CFS) =      30.18

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.38; 30M = 0.78; 1HR = 1.03; 3HR = 1.91; 6HR = 2.83; 24HR = 6.12

****************************************************************************
  FLOW PROCESS FROM NODE LR020123.0 TO NODE LR020124.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2800.00  DOWNSTREAM(FEET) =   2720.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   734.74   CHANNEL SLOPE =  0.1089
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     30.18
  FLOW VELOCITY(FEET/SEC.) =   7.58   FLOW DEPTH(FEET) =   1.26
  TRAVEL TIME(MIN.) =   1.61   Tc(MIN.) =  14.43
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20124.00 =  2131.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020124.0 TO NODE LR020124.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN) =  14.43
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.422
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       33.25      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =   33.25      SUBAREA RUNOFF(CFS) =   54.11
  EFFECTIVE AREA(ACRES) =     50.13   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     50.13       PEAK FLOW RATE(CFS) =      81.57

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.38; 30M = 0.78; 1HR = 1.03; 3HR = 1.91; 6HR = 2.83; 24HR = 6.12

****************************************************************************
  FLOW PROCESS FROM NODE LR020124.0 TO NODE LR020125.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2720.00  DOWNSTREAM(FEET) =   2620.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   932.28   CHANNEL SLOPE =  0.1073
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
```

```
  CHANNEL FLOW THRU SUBAREA(CFS) =     81.57
  FLOW VELOCITY(FEET/SEC.) =   9.70   FLOW DEPTH(FEET) =   1.83
  TRAVEL TIME(MIN.) =   1.60   Tc(MIN.) =  16.03
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20125.00 =  3064.17 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020125.0 TO NODE LR020125.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  16.03
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.274
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       36.51      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =   36.51      SUBAREA RUNOFF(CFS) =   54.54
  EFFECTIVE AREA(ACRES) =     86.64   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     86.64       PEAK FLOW RATE(CFS) =     129.43

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.38; 30M = 0.78; 1HR = 1.03; 3HR = 1.91; 6HR = 2.83; 24HR = 6.12

****************************************************************************
  FLOW PROCESS FROM NODE LR020125.0 TO NODE LR020126.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2620.00  DOWNSTREAM(FEET) =   2600.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1333.93   CHANNEL SLOPE =  0.0150
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   4.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    129.43
  FLOW VELOCITY(FEET/SEC.) =   5.20   FLOW DEPTH(FEET) =   3.15
  TRAVEL TIME(MIN.) =   4.27   Tc(MIN.) =  20.30
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20126.00 =  4398.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020126.0 TO NODE LR020126.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  20.30
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.973
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       60.59      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =   60.59      SUBAREA RUNOFF(CFS) =   74.13
  EFFECTIVE AREA(ACRES) =    147.23   AREA-AVERAGED Fm(INCH/HR) =  0.61
```



```
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    147.23       PEAK FLOW RATE(CFS) =     180.12

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.38; 30M = 0.78; 1HR = 1.03; 3HR = 1.91; 6HR = 2.83; 24HR = 6.12

****************************************************************************
  FLOW PROCESS FROM NODE LR020126.0 TO NODE LR020127.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2600.00  DOWNSTREAM(FEET) =   2420.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1404.24   CHANNEL SLOPE =  0.1282
  CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    180.12
  FLOW VELOCITY(FEET/SEC.) =   9.86   FLOW DEPTH(FEET) =   0.84
  TRAVEL TIME(MIN.) =   2.37   Tc(MIN.) =  22.67
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20127.00 =  5802.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020127.0 TO NODE LR020127.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  22.67
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.847
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       45.37      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =   45.37      SUBAREA RUNOFF(CFS) =   50.34
  EFFECTIVE AREA(ACRES) =    192.60   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    192.60       PEAK FLOW RATE(CFS) =     213.68

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.38; 30M = 0.78; 1HR = 1.03; 3HR = 1.91; 6HR = 2.83; 24HR = 6.12

****************************************************************************
  FLOW PROCESS FROM NODE LR020127.0 TO NODE LR020128.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2420.00  DOWNSTREAM(FEET) =   2240.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1246.58   CHANNEL SLOPE =  0.1444
  CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    213.68
  FLOW VELOCITY(FEET/SEC.) =   9.63   FLOW DEPTH(FEET) =   0.71
  TRAVEL TIME(MIN.) =   2.16   Tc(MIN.) =  24.83
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20128.00 =  7048.92 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR020128.0 TO NODE LR020128.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  24.83
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.749
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       27.94      0.61      1.00    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        8.51      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.64
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.93
  SUBAREA AREA(ACRES) =   36.45      SUBAREA RUNOFF(CFS) =   37.92
  EFFECTIVE AREA(ACRES) =    229.05   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.62  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    229.05       PEAK FLOW RATE(CFS) =     234.60

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.38; 30M = 0.78; 1HR = 1.03; 3HR = 1.91; 6HR = 2.83; 24HR = 6.12

****************************************************************************
  FLOW PROCESS FROM NODE LR020128.0 TO NODE LR020129.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2240.00  DOWNSTREAM(FEET) =   2120.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1393.78   CHANNEL SLOPE =  0.0861
  CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    234.60
  FLOW VELOCITY(FEET/SEC.) =   8.47   FLOW DEPTH(FEET) =   0.87
  TRAVEL TIME(MIN.) =   2.74   Tc(MIN.) =  27.58
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20129.00 =  8442.70 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020129.0 TO NODE LR020129.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  27.58
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.642
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       18.57      0.61      1.00    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       10.38      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.65
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.89
  SUBAREA AREA(ACRES) =   28.95      SUBAREA RUNOFF(CFS) =   27.63
  EFFECTIVE AREA(ACRES) =    258.00   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.62  AREA-AVERAGED Ap =  0.98
```



```
  TOTAL AREA(ACRES) =    258.00       PEAK FLOW RATE(CFS) =     240.27

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.38; 30M = 0.78; 1HR = 1.03; 3HR = 1.91; 6HR = 2.83; 24HR = 6.12

****************************************************************************
  FLOW PROCESS FROM NODE LR020129.0 TO NODE LR020130.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2120.00  DOWNSTREAM(FEET) =   1995.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2018.40   CHANNEL SLOPE =  0.0619
  CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    240.27
  FLOW VELOCITY(FEET/SEC.) =   7.72   FLOW DEPTH(FEET) =   0.97
  TRAVEL TIME(MIN.) =   4.36   Tc(MIN.) =  31.93
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20130.00 = 10461.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020130.0 TO NODE LR020130.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  31.93
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.504
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       28.04      0.75      0.90    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       51.49      0.61      1.00    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       30.71      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.68
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.89
  SUBAREA AREA(ACRES) =  110.24      SUBAREA RUNOFF(CFS) =   89.29
  EFFECTIVE AREA(ACRES) =    368.24   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.64  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =    368.24       PEAK FLOW RATE(CFS) =     297.44

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.38; 30M = 0.78; 1HR = 1.03; 3HR = 1.91; 6HR = 2.83; 24HR = 6.12

****************************************************************************
  FLOW PROCESS FROM NODE LR020130.0 TO NODE LR020148.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1995.00  DOWNSTREAM(FEET) =   1925.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1246.14   CHANNEL SLOPE =  0.0562
  CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    297.44
  FLOW VELOCITY(FEET/SEC.) =   8.09   FLOW DEPTH(FEET) =   1.14
```

```
  TRAVEL TIME(MIN.) =   2.57   Tc(MIN.) =  34.50
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20148.00 = 11707.24 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020148.0 TO NODE LR020148.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  34.50
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.436
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       19.93      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.65      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.89
  SUBAREA AREA(ACRES) =   20.58      SUBAREA RUNOFF(CFS) =   14.25
  EFFECTIVE AREA(ACRES) =    388.82   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.64  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =    388.82       PEAK FLOW RATE(CFS) =     297.44
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.38; 30M = 0.78; 1HR = 1.03; 3HR = 1.91; 6HR = 2.83; 24HR = 6.12

****************************************************************************
  FLOW PROCESS FROM NODE LR020148.0 TO NODE LR020148.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  34.50
  RAINFALL INTENSITY(INCH/HR) =   1.44
  AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.64
  AREA-AVERAGED Ap =  0.95
  EFFECTIVE STREAM AREA(ACRES) =   388.82
  TOTAL STREAM AREA(ACRES) =   388.82
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    297.44

****************************************************************************
  FLOW PROCESS FROM NODE LR020140.0 TO NODE LR020141.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   823.61
  ELEVATION DATA: UPSTREAM(FEET) =   3000.00  DOWNSTREAM(FEET) =   2690.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.588
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.629
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
```



```
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        8.14      0.61      1.00    66   12.59
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA RUNOFF(CFS) =     14.76
  TOTAL AREA(ACRES) =      8.14   PEAK FLOW RATE(CFS) =     14.76

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.38; 30M = 0.78; 1HR = 1.03; 3HR = 1.91; 6HR = 2.83; 24HR = 6.12

****************************************************************************
  FLOW PROCESS FROM NODE LR020141.0 TO NODE LR020142.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2690.00  DOWNSTREAM(FEET) =   2560.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   610.78   CHANNEL SLOPE =  0.2128
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     14.76
  FLOW VELOCITY(FEET/SEC.) =   8.18   FLOW DEPTH(FEET) =   0.85
  TRAVEL TIME(MIN.) =   1.24   Tc(MIN.) =  13.83
  LONGEST FLOWPATH FROM NODE  20140.00 TO NODE  20142.00 =  1434.39 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020142.0 TO NODE LR020142.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  13.83
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.484
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       15.44      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =   15.44      SUBAREA RUNOFF(CFS) =   25.99
  EFFECTIVE AREA(ACRES) =     23.58   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     23.58       PEAK FLOW RATE(CFS) =      39.69

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.38; 30M = 0.78; 1HR = 1.03; 3HR = 1.91; 6HR = 2.83; 24HR = 6.12

****************************************************************************
  FLOW PROCESS FROM NODE LR020142.0 TO NODE LR020143.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2560.00  DOWNSTREAM(FEET) =   2420.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   771.13   CHANNEL SLOPE =  0.1816
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
```

```
  CHANNEL FLOW THRU SUBAREA(CFS) =     39.69
  FLOW VELOCITY(FEET/SEC.) =   9.85   FLOW DEPTH(FEET) =   1.27
  TRAVEL TIME(MIN.) =   1.30   Tc(MIN.) =  15.14
  LONGEST FLOWPATH FROM NODE  20140.00 TO NODE  20143.00 =  2205.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020143.0 TO NODE LR020143.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  15.14
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.353
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       22.70      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =   22.70      SUBAREA RUNOFF(CFS) =   35.54
  EFFECTIVE AREA(ACRES) =     46.28   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     46.28       PEAK FLOW RATE(CFS) =      72.45

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.38; 30M = 0.78; 1HR = 1.03; 3HR = 1.91; 6HR = 2.83; 24HR = 6.12

****************************************************************************
  FLOW PROCESS FROM NODE LR020143.0 TO NODE LR020144.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2420.00  DOWNSTREAM(FEET) =   2240.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1310.58   CHANNEL SLOPE =  0.1373
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     72.45
  FLOW VELOCITY(FEET/SEC.) =  10.35   FLOW DEPTH(FEET) =   1.67
  TRAVEL TIME(MIN.) =   2.11   Tc(MIN.) =  17.25
  LONGEST FLOWPATH FROM NODE  20140.00 TO NODE  20144.00 =  3516.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020144.0 TO NODE LR020144.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.25
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.176
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       61.27      0.61      1.00    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"          B       11.25      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.63
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.98
```



```
  SUBAREA AREA(ACRES) =   72.52      SUBAREA RUNOFF(CFS) =  101.35
  EFFECTIVE AREA(ACRES) =    118.80   AREA-AVERAGED Fm(INCH/HR) =  0.62
  AREA-AVERAGED Fp(INCH/HR) =  0.63  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    118.80       PEAK FLOW RATE(CFS) =     166.42

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.38; 30M = 0.78; 1HR = 1.03; 3HR = 1.91; 6HR = 2.83; 24HR = 6.12

****************************************************************************
  FLOW PROCESS FROM NODE LR020144.0 TO NODE LR020145.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2240.00  DOWNSTREAM(FEET) =   2150.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1185.29   CHANNEL SLOPE =  0.0759
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.50
  CHANNEL FLOW THRU SUBAREA(CFS) =    166.42
  FLOW VELOCITY(FEET/SEC.) =  10.35   FLOW DEPTH(FEET) =   1.85
  TRAVEL TIME(MIN.) =   1.91   Tc(MIN.) =  19.16
  LONGEST FLOWPATH FROM NODE  20140.00 TO NODE  20145.00 =  4701.39 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020145.0 TO NODE LR020145.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  19.16
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.043
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       27.90      0.61      1.00    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"          B       18.45      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.66
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.96
  SUBAREA AREA(ACRES) =   46.35      SUBAREA RUNOFF(CFS) =   58.64
  EFFECTIVE AREA(ACRES) =    165.15   AREA-AVERAGED Fm(INCH/HR) =  0.62
  AREA-AVERAGED Fp(INCH/HR) =  0.64  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    165.15       PEAK FLOW RATE(CFS) =     210.85

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.38; 30M = 0.78; 1HR = 1.03; 3HR = 1.91; 6HR = 2.83; 24HR = 6.12

****************************************************************************
  FLOW PROCESS FROM NODE LR020145.0 TO NODE LR020146.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2150.00  DOWNSTREAM(FEET) =   2065.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1106.66   CHANNEL SLOPE =  0.0768
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    210.85
```

```
  FLOW VELOCITY(FEET/SEC.) =  11.08   FLOW DEPTH(FEET) =   2.08
  TRAVEL TIME(MIN.) =   1.66   Tc(MIN.) =  20.82
  LONGEST FLOWPATH FROM NODE  20140.00 TO NODE  20146.00 =  5808.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020146.0 TO NODE LR020146.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  20.82
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.944
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        5.66      0.61      1.00    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       28.22      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.72
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.92
  SUBAREA AREA(ACRES) =   33.88      SUBAREA RUNOFF(CFS) =   39.04
  EFFECTIVE AREA(ACRES) =    199.03   AREA-AVERAGED Fm(INCH/HR) =  0.63
  AREA-AVERAGED Fp(INCH/HR) =  0.65  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    199.03       PEAK FLOW RATE(CFS) =     235.08

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.38; 30M = 0.78; 1HR = 1.03; 3HR = 1.91; 6HR = 2.83; 24HR = 6.12

****************************************************************************
  FLOW PROCESS FROM NODE LR020146.0 TO NODE LR020147.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2065.00  DOWNSTREAM(FEET) =   1980.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1084.55   CHANNEL SLOPE =  0.0784
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    235.08
  FLOW VELOCITY(FEET/SEC.) =  11.48   FLOW DEPTH(FEET) =   2.18
  TRAVEL TIME(MIN.) =   1.57   Tc(MIN.) =  22.40
  LONGEST FLOWPATH FROM NODE  20140.00 TO NODE  20147.00 =  6892.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020147.0 TO NODE LR020147.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  22.40
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.860
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       15.70      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.90
  SUBAREA AREA(ACRES) =   15.70      SUBAREA RUNOFF(CFS) =   16.78
```



```
  EFFECTIVE AREA(ACRES) =    214.73   AREA-AVERAGED Fm(INCH/HR) =  0.63
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    214.73       PEAK FLOW RATE(CFS) =     236.96

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.38; 30M = 0.78; 1HR = 1.03; 3HR = 1.91; 6HR = 2.83; 24HR = 6.12

****************************************************************************
  FLOW PROCESS FROM NODE LR020147.0 TO NODE LR020148.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1980.00  DOWNSTREAM(FEET) =   1925.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   934.91   CHANNEL SLOPE =  0.0588
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    236.96
  FLOW VELOCITY(FEET/SEC.) =  10.36   FLOW DEPTH(FEET) =   2.35
  TRAVEL TIME(MIN.) =   1.50   Tc(MIN.) =  23.90
  LONGEST FLOWPATH FROM NODE  20140.00 TO NODE  20148.00 =  7827.51 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020148.0 TO NODE LR020148.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  23.90
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.789
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       14.97      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.90
  SUBAREA AREA(ACRES) =   14.97      SUBAREA RUNOFF(CFS) =   15.04
  EFFECTIVE AREA(ACRES) =    229.70   AREA-AVERAGED Fm(INCH/HR) =  0.64
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.96
  TOTAL AREA(ACRES) =    229.70       PEAK FLOW RATE(CFS) =     238.25

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.38; 30M = 0.78; 1HR = 1.03; 3HR = 1.91; 6HR = 2.83; 24HR = 6.12

****************************************************************************
  FLOW PROCESS FROM NODE LR020148.0 TO NODE LR020148.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  23.90
  RAINFALL INTENSITY(INCH/HR) =   1.79
  AREA-AVERAGED Fm(INCH/HR) =  0.64
  AREA-AVERAGED Fp(INCH/HR) =  0.66
  AREA-AVERAGED Ap =  0.96
  EFFECTIVE STREAM AREA(ACRES) =   229.70
```

```
  TOTAL STREAM AREA(ACRES) =   229.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    238.25

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    297.44  34.50    1.436  0.64( 0.61) 0.95   388.8 LR020120.0
      2    238.25  23.90    1.789  0.66( 0.64) 0.96   229.7 LR020140.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    532.53  23.90    1.789  0.65( 0.62) 0.95   499.1 LR020140.0
      2    462.57  34.50    1.436  0.65( 0.62) 0.95   618.5 LR020120.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    532.53    Tc(MIN.) =    23.90
  EFFECTIVE AREA(ACRES) =   499.06   AREA-AVERAGED Fm(INCH/HR) =  0.62
  AREA-AVERAGED Fp(INCH/HR) =  0.65  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =    618.52
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20148.00 = 11707.24 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020148.0 TO NODE LR020149.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1925.00  DOWNSTREAM(FEET) =   1900.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   764.60   CHANNEL SLOPE =  0.0327
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    532.53
  FLOW VELOCITY(FEET/SEC.) =  10.02   FLOW DEPTH(FEET) =   3.23
  TRAVEL TIME(MIN.) =   1.27   Tc(MIN.) =  25.17
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20149.00 = 12471.84 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020149.0 TO NODE LR020149.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  25.17
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.734
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       20.34      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.62      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.89
  SUBAREA AREA(ACRES) =   20.96      SUBAREA RUNOFF(CFS) =   20.15
  EFFECTIVE AREA(ACRES) =    520.02   AREA-AVERAGED Fm(INCH/HR) =  0.62
```



```
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =    639.48       PEAK FLOW RATE(CFS) =     532.53
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.38; 30M = 0.78; 1HR = 1.03; 3HR = 1.91; 6HR = 2.83; 24HR = 6.12

****************************************************************************
  FLOW PROCESS FROM NODE LR020149.0 TO NODE LR020150.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1900.00  DOWNSTREAM(FEET) =   1850.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1212.57   CHANNEL SLOPE =  0.0412
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    532.53
  FLOW VELOCITY(FEET/SEC.) =  10.90   FLOW DEPTH(FEET) =   3.04
  TRAVEL TIME(MIN.) =   1.85   Tc(MIN.) =  27.03
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20150.00 = 13684.41 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020150.0 TO NODE LR020150.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  27.03
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.662
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        8.58      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.10      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.90
  SUBAREA AREA(ACRES) =    8.68      SUBAREA RUNOFF(CFS) =    7.75
  EFFECTIVE AREA(ACRES) =    528.70   AREA-AVERAGED Fm(INCH/HR) =  0.62
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =    648.16       PEAK FLOW RATE(CFS) =     532.53
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.38; 30M = 0.78; 1HR = 1.03; 3HR = 1.91; 6HR = 2.83; 24HR = 6.12

****************************************************************************
  FLOW PROCESS FROM NODE LR020150.0 TO NODE LR020150.0 IS CODE =  71
----------------------------------------------------------------------------
  >>>>>PEAK FLOW RATE ESTIMATOR CHANGED TO UNIT-HYDROGRAPH METHOD<<<<<
  >>>>>USING TIME-OF-CONCENTRATION OF LONGEST FLOWPATH<<<<<
============================================================================
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.38;30M= 0.78;1H= 1.03;3H= 1.91;6H= 2.83;24H= 6.12
  S-GRAPH: VALLEY(DEV.)=  7.9%;VALLEY(UNDEV.)/DESERT= 92.1%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.63; LAG(HR) = 0.50; Fm(INCH/HR) = 0.62; Ybar = 0.60
```

```
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 1.00; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    648.16
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20150.00 = 13684.41 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0524; Lca/L=0.4,n=.0469; Lca/L=0.5,n=.0431;Lca/L=0.6,n=.0402
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     142.13
  UNIT-HYDROGRAPH METHOD PEAK FLOW RATE(CFS) =    486.50
  TOTAL PEAK FLOW RATE(CFS) =    486.50 (SOURCE FLOW INCLUDED)
  RATIONAL METHOD PEAK FLOW RATE(CFS) =    532.53
   (UPSTREAM NODE PEAK FLOW RATE(CFS) =    532.53)
  PEAK FLOW RATE(CFS) USED =    532.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020150.0 TO NODE LR020150.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =      532.53    Tc(MIN.) =  37.75
  AREA-AVERAGED Fm(INCH/HR) =  0.62    Ybar = 0.60
  TOTAL AREA(ACRES) =     648.16
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20150.00 = 13684.41 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     1151.33    Tc(MIN.) =  22.44
  AREA-AVERAGED Fm(INCH/HR) =  0.60    Ybar = 0.59
  TOTAL AREA(ACRES) =    1052.30
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20150.00 = 13659.16 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.38;30M= 0.78;1H= 1.03;3H= 1.91;6H= 2.83;24H= 6.12
  S-GRAPH: VALLEY(DEV.)= 24.5%;VALLEY(UNDEV.)/DESERT= 75.5%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.63; LAG(HR) = 0.50; Fm(INCH/HR) = 0.61; Ybar = 0.60
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.92; 30M = 0.92; 1HR = 0.92;
  3HR = 0.99; 6HR = 0.99; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1700.46
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20150.00 = 13684.41 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0524; Lca/L=0.4,n=.0469; Lca/L=0.5,n=.0431;Lca/L=0.6,n=.0402
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     374.29
  PEAK FLOW RATE(CFS) =    1232.64

****************************************************************************
  FLOW PROCESS FROM NODE LR020150.0 TO NODE LR020150.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020150.0 TO NODE LR020151.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```



```
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1850.00  DOWNSTREAM(FEET) =   1785.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1753.77   CHANNEL SLOPE =  0.0371
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   1232.64
  FLOW VELOCITY(FEET/SEC.) =  29.26   FLOW DEPTH(FEET) =   2.73
  TRAVEL TIME(MIN.) =   1.00   Tc(MIN.) =  38.75
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20151.00 = 15438.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020151.0 TO NODE LR020151.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  38.75
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.339
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       24.58      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.90
  SUBAREA AREA(ACRES) =   24.58
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.38;30M= 0.78;1H= 1.03;3H= 1.91;6H= 2.83;24H= 6.12
  S-GRAPH: VALLEY(DEV.)= 24.1%;VALLEY(UNDEV.)/DESERT= 75.9%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.65; LAG(HR) = 0.52; Fm(INCH/HR) = 0.61; Ybar = 0.60
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.92; 30M = 0.92; 1HR = 0.92;
  3HR = 0.99; 6HR = 0.99; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1725.04
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20151.00 = 15438.18 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0484; Lca/L=0.4,n=.0434; Lca/L=0.5,n=.0398;Lca/L=0.6,n=.0372
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     378.86
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1222.86
  TOTAL AREA(ACRES) =   1725.04       PEAK FLOW RATE(CFS) =    1232.64
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.38; 30M = 0.78; 1HR = 1.03; 3HR = 1.91; 6HR = 2.83; 24HR = 6.12

****************************************************************************
  FLOW PROCESS FROM NODE LR020151.0 TO NODE LR020151.0 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20151.DNA
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =   1725.04  TC(MIN.) =     38.75
  AREA-AVERAGED Fm(INCH/HR)=  0.61   Ybar =  0.60
  PEAK FLOW RATE(CFS)   =   1232.64
============================================================================
```

==========
END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS

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 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
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             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                          San Bernardino County
                    Transportation/ Flood Control Department

                          Water Resources Division

 ************************* DESCRIPTION OF STUDY *************************
* LR 0202ZZ FILE                                                       *
*  25-YEAR STORM                                                       *
*                                                                      *
 ************************************************************************

  FILE NAME: LR0202ZZ.Z25
  TIME/DATE OF STUDY: 11:26 02/23/2006
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 0.9900

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)     SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
```



```
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


 ************************************************************************
  FLOW PROCESS FROM NODE LR020200.0 TO NODE LR020201.0 IS CODE =  21
 ------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   508.83
  ELEVATION DATA: UPSTREAM(FEET) =   1945.00  DOWNSTREAM(FEET) =   1935.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.936
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.749
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        4.64      0.98      0.60    32   10.94
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =      9.04
  TOTAL AREA(ACRES) =      4.64   PEAK FLOW RATE(CFS) =      9.04

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

 ************************************************************************
  FLOW PROCESS FROM NODE LR020201.0 TO NODE LR020202.0 IS CODE =  92
 ------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
========================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1935.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1930.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   620.72
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
```

```
 MAXIMUM DEPTH(FEET) =   1.00
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.331
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        6.32      0.98      0.60    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     14.01
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.99
 AVERAGE FLOW DEPTH(FEET) =   0.59   FLOOD WIDTH(FEET) =   30.86
 "V" GUTTER FLOW TRAVEL TIME(MIN.) =   3.46   Tc(MIN.) =  14.39
 SUBAREA AREA(ACRES) =    6.32       SUBAREA RUNOFF(CFS) =    9.93
 EFFECTIVE AREA(ACRES) =   10.96     AREA-AVERAGED Fm(INCH/HR) =   0.59
 AREA-AVERAGED Fp(INCH/HR) =   0.98  AREA-AVERAGED Ap =   0.60
 TOTAL AREA(ACRES) =     10.96         PEAK FLOW RATE(CFS) =      17.23

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

 END OF SUBAREA "V" GUTTER HYDRAULICS:
 DEPTH(FEET) =  0.61   FLOOD WIDTH(FEET) =   34.14
 FLOW VELOCITY(FEET/SEC.) =   3.08   DEPTH*VELOCITY(FT*FT/SEC) =   1.89
 LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20202.00 =  1129.55 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020202.0 TO NODE LR020203.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1930.00  DOWNSTREAM ELEVATION(FEET) = 1910.00
 STREET LENGTH(FEET) =   369.50   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 32.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.76

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      25.59
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.45
   HALFSTREET FLOOD WIDTH(FEET) =   14.62
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.50
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.48
 STREET FLOW TRAVEL TIME(MIN.) =   1.12   Tc(MIN.) =  15.51
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.229
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
```



```
 "3-4 DWELLINGS/ACRE"       A       11.02      0.98      0.60    32
 MOBILE HOME PARK           A        0.23      0.98      0.25    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.59
 SUBAREA AREA(ACRES) =   11.25      SUBAREA RUNOFF(CFS) =   16.71
 EFFECTIVE AREA(ACRES) =     22.21    AREA-AVERAGED Fm(INCH/HR) =  0.58
 AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =     22.21        PEAK FLOW RATE(CFS) =      32.93

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.48   HALFSTREET FLOOD WIDTH(FEET) =  16.18
 FLOW VELOCITY(FEET/SEC.) =  5.86   DEPTH*VELOCITY(FT*FT/SEC.) =   2.83
 LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20203.00 =  1499.05 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020203.0 TO NODE LR020204.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1910.00  DOWNSTREAM ELEVATION(FEET) = 1895.00
 STREET LENGTH(FEET) =   418.06   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 32.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      42.98
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.55
   HALFSTREET FLOOD WIDTH(FEET) =   19.62
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.32
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.93
 STREET FLOW TRAVEL TIME(MIN.) =   1.31   Tc(MIN.) =  16.82
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.123
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        6.00      0.98      0.60    32
 MOBILE HOME PARK           A        6.97      0.98      0.25    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.41
 SUBAREA AREA(ACRES) =   12.97      SUBAREA RUNOFF(CFS) =   20.10
 EFFECTIVE AREA(ACRES) =     35.18    AREA-AVERAGED Fm(INCH/HR) =  0.52
 AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.53
 TOTAL AREA(ACRES) =     35.18        PEAK FLOW RATE(CFS) =      50.91
```

```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.58   HALFSTREET FLOOD WIDTH(FEET) =  20.95
  FLOW VELOCITY(FEET/SEC.) =  5.56   DEPTH*VELOCITY(FT*FT/SEC.) =   3.21
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20204.00 =  1917.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020204.0 TO NODE LR020205.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1895.00  DOWNSTREAM ELEVATION(FEET) = 1875.00
  STREET LENGTH(FEET) =   555.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      63.05
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.61
    HALFSTREET FLOOD WIDTH(FEET) =   22.74
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.88
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.61
  STREET FLOW TRAVEL TIME(MIN.) =   1.57   Tc(MIN.) =  18.40
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.012
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        8.31      0.98      0.60    32
  MOBILE HOME PARK           A        8.55      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.42
  SUBAREA AREA(ACRES) =   16.86      SUBAREA RUNOFF(CFS) =   24.28
  EFFECTIVE AREA(ACRES) =     52.04    AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.49
  TOTAL AREA(ACRES) =     52.04        PEAK FLOW RATE(CFS) =      71.68

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.64   HALFSTREET FLOOD WIDTH(FEET) =  23.91
  FLOW VELOCITY(FEET/SEC.) =  6.07   DEPTH*VELOCITY(FT*FT/SEC.) =   3.86
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20205.00 =  2472.11 FEET.

****************************************************************************
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  FLOW PROCESS FROM NODE LR020205.0 TO NODE LR020206.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1875.00  DOWNSTREAM ELEVATION(FEET) = 1855.00
  STREET LENGTH(FEET) =   568.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      76.12
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.65
    HALFSTREET FLOOD WIDTH(FEET) =   24.62
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.09
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.96
  STREET FLOW TRAVEL TIME(MIN.) =   1.55   Tc(MIN.) =  19.95
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.917
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A        4.58      0.98      0.25    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.65      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.34
  SUBAREA AREA(ACRES) =    6.23      SUBAREA RUNOFF(CFS) =    8.87
  EFFECTIVE AREA(ACRES) =     58.27    AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.48
  TOTAL AREA(ACRES) =     58.27        PEAK FLOW RATE(CFS) =      76.08

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.65   HALFSTREET FLOOD WIDTH(FEET) =  24.62
  FLOW VELOCITY(FEET/SEC.) =  6.09   DEPTH*VELOCITY(FT*FT/SEC.) =   3.96
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20206.00 =  3040.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020206.0 TO NODE LR020214.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1855.00  DOWNSTREAM ELEVATION(FEET) = 1840.00
  STREET LENGTH(FEET) =   411.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00
```

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  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.83

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      77.65
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.65
    HALFSTREET FLOOD WIDTH(FEET) =   24.62
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.21
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.04
  STREET FLOW TRAVEL TIME(MIN.) =   1.10   Tc(MIN.) =  21.05
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.856
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A        1.68      0.98      0.25    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.62      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.34
  SUBAREA AREA(ACRES) =    2.30      SUBAREA RUNOFF(CFS) =    3.15
  EFFECTIVE AREA(ACRES) =     60.57    AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.47
  TOTAL AREA(ACRES) =     60.57        PEAK FLOW RATE(CFS) =      76.08
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.65   HALFSTREET FLOOD WIDTH(FEET) =  24.46
  FLOW VELOCITY(FEET/SEC.) =  6.16   DEPTH*VELOCITY(FT*FT/SEC.) =   3.99
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20214.00 =  3451.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020214.0 TO NODE LR020214.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  21.05
  RAINFALL INTENSITY(INCH/HR) =   1.86
  AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.97
  AREA-AVERAGED Ap =  0.47
  EFFECTIVE STREAM AREA(ACRES) =    60.57
  TOTAL STREAM AREA(ACRES) =    60.57
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     76.08

****************************************************************************
  FLOW PROCESS FROM NODE LR020210.0 TO NODE LR020211.0 IS CODE =  21
```



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----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   940.61
  ELEVATION DATA: UPSTREAM(FEET) =   1875.00  DOWNSTREAM(FEET) =   1850.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.163
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.460
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        7.95      0.98      0.60    32   13.16
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     13.41
  TOTAL AREA(ACRES) =      7.95   PEAK FLOW RATE(CFS) =     13.41

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020211.0 TO NODE LR020212.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1850.00  DOWNSTREAM ELEVATION(FEET) = 1846.00
  STREET LENGTH(FEET) =   247.17   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      17.70
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.45
    HALFSTREET FLOOD WIDTH(FEET) =   16.32
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.18
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.44
  STREET FLOW TRAVEL TIME(MIN.) =   1.29   Tc(MIN.) =  14.46
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.325
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        4.82      0.98      0.60    32
  MOBILE HOME PARK           A        0.55      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
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  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.56
  SUBAREA AREA(ACRES) =    5.37      SUBAREA RUNOFF(CFS) =    8.58
  EFFECTIVE AREA(ACRES) =     13.32    AREA-AVERAGED Fm(INCH/HR) =  0.57
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.59
  TOTAL AREA(ACRES) =     13.32        PEAK FLOW RATE(CFS) =      21.03

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.48   HALFSTREET FLOOD WIDTH(FEET) =  17.49
  FLOW VELOCITY(FEET/SEC.) =  3.31   DEPTH*VELOCITY(FT*FT/SEC.) =   1.58
  LONGEST FLOWPATH FROM NODE  20210.00 TO NODE  20212.00 =  1187.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020212.0 TO NODE LR020213.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1846.00  DOWNSTREAM ELEVATION(FEET) = 1843.00
  STREET LENGTH(FEET) =   253.21   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      25.60
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.52
    HALFSTREET FLOOD WIDTH(FEET) =   19.05
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.20
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.67
  STREET FLOW TRAVEL TIME(MIN.) =   1.32   Tc(MIN.) =  15.77
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.207
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        2.35      0.98      0.60    32
  MOBILE HOME PARK           A        3.23      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
  SUBAREA AREA(ACRES) =    5.58      SUBAREA RUNOFF(CFS) =    9.14
  EFFECTIVE AREA(ACRES) =     18.90    AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.53
  TOTAL AREA(ACRES) =     18.90        PEAK FLOW RATE(CFS) =      28.75

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53
```



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  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.54   HALFSTREET FLOOD WIDTH(FEET) =  19.85
  FLOW VELOCITY(FEET/SEC.) =  3.34   DEPTH*VELOCITY(FT*FT/SEC.) =   1.79
  LONGEST FLOWPATH FROM NODE  20210.00 TO NODE  20213.00 =  1440.99 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020213.0 TO NODE LR020214.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1843.00  DOWNSTREAM ELEVATION(FEET) = 1840.00
  STREET LENGTH(FEET) =   294.25   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      30.54
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.56
    HALFSTREET FLOOD WIDTH(FEET) =   20.82
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.25
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.81
  STREET FLOW TRAVEL TIME(MIN.) =   1.51   Tc(MIN.) =  17.28
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.089
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.63      0.98      0.60    32
  MOBILE HOME PARK           A        1.65      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.35
  SUBAREA AREA(ACRES) =    2.28      SUBAREA RUNOFF(CFS) =    3.59
  EFFECTIVE AREA(ACRES) =     21.18    AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.51
  TOTAL AREA(ACRES) =     21.18        PEAK FLOW RATE(CFS) =      30.34

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.56   HALFSTREET FLOOD WIDTH(FEET) =  20.76
  FLOW VELOCITY(FEET/SEC.) =  3.24   DEPTH*VELOCITY(FT*FT/SEC.) =   1.80
  LONGEST FLOWPATH FROM NODE  20210.00 TO NODE  20214.00 =  1735.24 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020214.0 TO NODE LR020214.0 IS CODE =   1
```

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------------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  17.28
  RAINFALL INTENSITY(INCH/HR) =   2.09
  AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.98
  AREA-AVERAGED Ap =  0.51
  EFFECTIVE STREAM AREA(ACRES) =    21.18
  TOTAL STREAM AREA(ACRES) =    21.18
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     30.34

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1     76.08  21.05    1.856  0.97( 0.46) 0.47    60.6 LR020200.0
      2     30.34  17.28    2.089  0.98( 0.50) 0.51    21.2 LR020210.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    103.24  17.28    2.089  0.97( 0.47) 0.48    70.9 LR020210.0
      2    101.97  21.05    1.856  0.97( 0.47) 0.48    81.8 LR020200.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    103.24    Tc(MIN.) =    17.28
  EFFECTIVE AREA(ACRES) =    70.91   AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.48
  TOTAL AREA(ACRES) =     81.75
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20214.00 =  3451.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020214.0 TO NODE LR020215.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1840.00  DOWNSTREAM ELEVATION(FEET) = 1793.00
  STREET LENGTH(FEET) =  1205.58   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.82

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     129.42
```



```
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.75
    HALFSTREET FLOOD WIDTH(FEET) =   33.66
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.12
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.34
  STREET FLOW TRAVEL TIME(MIN.) =   2.82   Tc(MIN.) =  20.11
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.908
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       18.86      0.98      0.60    32
  MOBILE HOME PARK           A       19.95      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.42
  SUBAREA AREA(ACRES) =   38.81      SUBAREA RUNOFF(CFS) =   52.33
  EFFECTIVE AREA(ACRES) =    109.72    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.46
  TOTAL AREA(ACRES) =    120.56        PEAK FLOW RATE(CFS) =     143.97

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.77   HALFSTREET FLOOD WIDTH(FEET) =  36.00
  FLOW VELOCITY(FEET/SEC.) =  7.27   DEPTH*VELOCITY(FT*FT/SEC.) =   5.62
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20215.00 =  4656.69 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020215.0 TO NODE LR020216.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1793.00  DOWNSTREAM ELEVATION(FEET) = 1740.00
  STREET LENGTH(FEET) =  1725.28   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     171.81
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.84
    HALFSTREET FLOOD WIDTH(FEET) =   40.44
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.97
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.82
  STREET FLOW TRAVEL TIME(MIN.) =   4.13   Tc(MIN.) =  24.23
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.706
  SUBAREA LOSS RATE DATA(AMC  II):
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 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A       24.17      0.98       0.60    32
 SCHOOL                     A        9.62      0.98       0.60    32
 MOBILE HOME PARK           A       14.92      0.98       0.25    32
 COMMERCIAL                 A        0.89      0.98       0.10    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.13      0.75       0.60    56
 COMMERCIAL                 B        0.31      0.75       0.10    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.48
 SUBAREA AREA(ACRES) =   50.04      SUBAREA RUNOFF(CFS) =   55.60
 EFFECTIVE AREA(ACRES) =    159.76    AREA-AVERAGED Fm(INCH/HR) =  0.46
 AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.47
 TOTAL AREA(ACRES) =    170.60        PEAK FLOW RATE(CFS) =     179.59

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.84   HALFSTREET FLOOD WIDTH(FEET) =  40.87
 FLOW VELOCITY(FEET/SEC.) =  7.08   DEPTH*VELOCITY(FT*FT/SEC.) =   5.98
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L = 1725.3 FT WITH ELEVATION-DROP =  53.0 FT, IS   95.7 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20216.00
 LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20216.00 =  6381.97 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020216.0 TO NODE LR020232.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1740.00  DOWNSTREAM ELEVATION(FEET) = 1739.00
 STREET LENGTH(FEET) =  1052.00   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 32.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     185.34
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  1.43
   HALFSTREET FLOOD WIDTH(FEET) =   70.29
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.04
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.92
 STREET FLOW TRAVEL TIME(MIN.) =   8.59   Tc(MIN.) =  32.82
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.422
 SUBAREA LOSS RATE DATA(AMC  II):
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```
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 MOBILE HOME PARK           A        0.63      0.98       0.25    32
 COMMERCIAL                 B        1.46      0.75       0.10    56
 MOBILE HOME PARK           B        4.91      0.75       0.25    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        4.10      0.75       0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.76
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.36
 SUBAREA AREA(ACRES) =   11.10      SUBAREA RUNOFF(CFS) =   11.48
 EFFECTIVE AREA(ACRES) =    170.86    AREA-AVERAGED Fm(INCH/HR) =  0.44
 AREA-AVERAGED Fp(INCH/HR) =  0.96  AREA-AVERAGED Ap =  0.46
 TOTAL AREA(ACRES) =    181.70        PEAK FLOW RATE(CFS) =     179.59
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 1.42   HALFSTREET FLOOD WIDTH(FEET) =  69.49
 FLOW VELOCITY(FEET/SEC.) =  2.03   DEPTH*VELOCITY(FT*FT/SEC.) =   2.87

 *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
        THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 1.07
 SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
 ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
 ESTIMATED PIPE DIAMETER(INCH) =  69.00    NUMBER OF PIPES =   1
 ASSUME FULL-FLOWING PIPELINE
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.14
 PIPE-FLOW(CFS) =    107.49
 PIPEFLOW TRAVEL TIME(MIN.) =   4.24    Tc(MIN.) =  28.47
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.548
 SUBAREA AREA(ACRES) =   11.10      SUBAREA RUNOFF(CFS) =   12.75
 TOTAL AREA(ACRES) =    181.70        PEAK FLOW RATE(CFS) =    179.59
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   72.10
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  1.06
   HALFSTREET FLOOD WIDTH(FEET) =   51.67
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.59
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.69
 LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20232.00 =  7433.97 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020232.0 TO NODE LR020232.0 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  28.47
 RAINFALL INTENSITY(INCH/HR) =   1.55
 AREA-AVERAGED Fm(INCH/HR) =  0.44
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  AREA-AVERAGED Fp(INCH/HR) =  0.96
  AREA-AVERAGED Ap =  0.46
  EFFECTIVE STREAM AREA(ACRES) =   170.86
  TOTAL STREAM AREA(ACRES) =   181.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    179.59

****************************************************************************
  FLOW PROCESS FROM NODE LR020220.0 TO NODE LR020221.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   598.74
  ELEVATION DATA: UPSTREAM(FEET) =   1935.00  DOWNSTREAM(FEET) =   1925.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.057
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.593
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        5.11      0.98      0.60    32   12.06
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =      9.23
  TOTAL AREA(ACRES) =      5.11   PEAK FLOW RATE(CFS) =      9.23

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020221.0 TO NODE LR020222.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1925.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1915.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   551.44
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.353
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        5.86      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     13.89
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.34
  AVERAGE FLOW DEPTH(FEET) =   0.53   FLOOD WIDTH(FEET) =   24.58
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   2.12   Tc(MIN.) =  14.18
  SUBAREA AREA(ACRES) =    5.86       SUBAREA RUNOFF(CFS) =     9.32
  EFFECTIVE AREA(ACRES) =   10.97     AREA-AVERAGED Fm(INCH/HR) =   0.59
  AREA-AVERAGED Fp(INCH/HR) =   0.98  AREA-AVERAGED Ap =   0.60
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  TOTAL AREA(ACRES) =     10.97         PEAK FLOW RATE(CFS) =      17.45

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.56   FLOOD WIDTH(FEET) =   27.87
  FLOW VELOCITY(FEET/SEC.) =   4.43   DEPTH*VELOCITY(FT*FT/SEC) =   2.49
  LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20222.00 =  1150.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020222.0 TO NODE LR020223.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1915.00  DOWNSTREAM ELEVATION(FEET) = 1905.00
  STREET LENGTH(FEET) =   354.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.82

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      25.69
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.47
    HALFSTREET FLOOD WIDTH(FEET) =   16.95
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.30
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.00
  STREET FLOW TRAVEL TIME(MIN.) =   1.37   Tc(MIN.) =  15.55
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.226
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       11.15      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   11.15      SUBAREA RUNOFF(CFS) =   16.47
  EFFECTIVE AREA(ACRES) =     22.12    AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     22.12        PEAK FLOW RATE(CFS) =      32.66

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.50   HALFSTREET FLOOD WIDTH(FEET) =  18.00
  FLOW VELOCITY(FEET/SEC.) =  4.61   DEPTH*VELOCITY(FT*FT/SEC.) =   2.29
  LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20223.00 =  1504.18 FEET.
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****************************************************************************
  FLOW PROCESS FROM NODE LR020223.0 TO NODE LR020224.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1905.00  DOWNSTREAM ELEVATION(FEET) = 1895.00
  STREET LENGTH(FEET) =   253.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.74

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      38.31
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.50
    HALFSTREET FLOOD WIDTH(FEET) =   18.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.44
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.69
  STREET FLOW TRAVEL TIME(MIN.) =   0.78   Tc(MIN.) =  16.33
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.162
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A        2.51      0.98      0.25    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        4.90      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.48
  SUBAREA AREA(ACRES) =    7.41      SUBAREA RUNOFF(CFS) =   11.29
  EFFECTIVE AREA(ACRES) =     29.53    AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.57
  TOTAL AREA(ACRES) =     29.53        PEAK FLOW RATE(CFS) =      42.68

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.51   HALFSTREET FLOOD WIDTH(FEET) =  18.44
  FLOW VELOCITY(FEET/SEC.) =  5.67   DEPTH*VELOCITY(FT*FT/SEC.) =   2.88
  LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20224.00 =  1757.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020224.0 TO NODE LR020225.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1895.00  DOWNSTREAM ELEVATION(FEET) = 1885.00
  STREET LENGTH(FEET) =   323.50   CURB HEIGHT(INCHES) =  6.0
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  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.80

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      49.89
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.55
    HALFSTREET FLOOD WIDTH(FEET) =   20.33
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.54
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.03
  STREET FLOW TRAVEL TIME(MIN.) =   0.97   Tc(MIN.) =  17.30
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.088
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A        3.70      0.98      0.25    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        6.13      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.47
  SUBAREA AREA(ACRES) =    9.83      SUBAREA RUNOFF(CFS) =   14.43
  EFFECTIVE AREA(ACRES) =     39.36    AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.54
  TOTAL AREA(ACRES) =     39.36        PEAK FLOW RATE(CFS) =      55.15

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.56   HALFSTREET FLOOD WIDTH(FEET) =  21.07
  FLOW VELOCITY(FEET/SEC.) =  5.74   DEPTH*VELOCITY(FT*FT/SEC.) =   3.22
  LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20225.00 =  2080.68 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020225.0 TO NODE LR020226.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1885.00  DOWNSTREAM ELEVATION(FEET) = 1875.00
  STREET LENGTH(FEET) =   288.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
```

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  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.77

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      61.94
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.57
    HALFSTREET FLOOD WIDTH(FEET) =   21.55
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.18
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.53
  STREET FLOW TRAVEL TIME(MIN.) =   0.78   Tc(MIN.) =  18.08
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.034
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        2.52      0.98      0.60    32
  MOBILE HOME PARK           A        6.40      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.35
  SUBAREA AREA(ACRES) =    8.92      SUBAREA RUNOFF(CFS) =   13.59
  EFFECTIVE AREA(ACRES) =     48.28    AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.51
  TOTAL AREA(ACRES) =     48.28        PEAK FLOW RATE(CFS) =      66.82

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.58   HALFSTREET FLOOD WIDTH(FEET) =  22.16
  FLOW VELOCITY(FEET/SEC.) =  6.33   DEPTH*VELOCITY(FT*FT/SEC.) =   3.69
  LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20226.00 =  2369.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020226.0 TO NODE LR020227.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1875.00  DOWNSTREAM ELEVATION(FEET) = 1863.00
  STREET LENGTH(FEET) =   404.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.81

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      76.19
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.62
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    HALFSTREET FLOOD WIDTH(FEET) =   23.93
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.25
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.87
  STREET FLOW TRAVEL TIME(MIN.) =   1.08   Tc(MIN.) =  19.16
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.964
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A        9.70      0.98      0.25    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        3.00      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.33
  SUBAREA AREA(ACRES) =   12.70      SUBAREA RUNOFF(CFS) =   18.74
  EFFECTIVE AREA(ACRES) =     60.98    AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.47
  TOTAL AREA(ACRES) =     60.98        PEAK FLOW RATE(CFS) =      82.54

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.63   HALFSTREET FLOOD WIDTH(FEET) =  24.67
  FLOW VELOCITY(FEET/SEC.) =  6.40   DEPTH*VELOCITY(FT*FT/SEC.) =   4.05
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  404.5 FT WITH ELEVATION-DROP =  12.0 FT, IS   35.7 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20227.00
  LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20227.00 =  2773.68 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020227.0 TO NODE LR020228.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1863.00  DOWNSTREAM ELEVATION(FEET) = 1848.00
  STREET LENGTH(FEET) =   374.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.74

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      89.49
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.62
    HALFSTREET FLOOD WIDTH(FEET) =   24.06
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.27
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.52
  STREET FLOW TRAVEL TIME(MIN.) =   0.86   Tc(MIN.) =  20.01
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.913
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 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 MOBILE HOME PARK           A        4.46      0.98      0.25    32
 PUBLIC PARK                A        4.98      0.98      0.85    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        1.96      0.98      0.60    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.57
 SUBAREA AREA(ACRES) =   11.40      SUBAREA RUNOFF(CFS) =   13.90
 EFFECTIVE AREA(ACRES) =     72.38    AREA-AVERAGED Fm(INCH/HR) =  0.48
 AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.49
 TOTAL AREA(ACRES) =     72.38        PEAK FLOW RATE(CFS) =      93.64

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.63   HALFSTREET FLOOD WIDTH(FEET) =  24.48
 FLOW VELOCITY(FEET/SEC.) =  7.36   DEPTH*VELOCITY(FT*FT/SEC.) =   4.64
 LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20228.00 =  3148.18 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020228.0 TO NODE LR020229.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1848.00  DOWNSTREAM ELEVATION(FEET) = 1826.00
 STREET LENGTH(FEET) =   510.53   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.73

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     102.85
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.64
   HALFSTREET FLOOD WIDTH(FEET) =   24.97
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.79
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.98
 STREET FLOW TRAVEL TIME(MIN.) =   1.09   Tc(MIN.) =  21.11
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.853
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 MOBILE HOME PARK           A        5.30      0.98      0.25    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        4.30      0.98      0.60    32
 PUBLIC PARK                A        6.33      0.98      0.85    32
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 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.58
 SUBAREA AREA(ACRES) =   15.93      SUBAREA RUNOFF(CFS) =   18.42
 EFFECTIVE AREA(ACRES) =     88.31    AREA-AVERAGED Fm(INCH/HR) =  0.49
 AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.50
 TOTAL AREA(ACRES) =     88.31        PEAK FLOW RATE(CFS) =     108.15

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.65   HALFSTREET FLOOD WIDTH(FEET) =  25.46
 FLOW VELOCITY(FEET/SEC.) =  7.90   DEPTH*VELOCITY(FT*FT/SEC.) =   5.13
 LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20229.00 =  3658.71 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020229.0 TO NODE LR020230.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1826.00  DOWNSTREAM ELEVATION(FEET) = 1800.00
 STREET LENGTH(FEET) =   713.66   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.76

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     120.89
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.69
   HALFSTREET FLOOD WIDTH(FEET) =   27.47
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.64
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.27
 STREET FLOW TRAVEL TIME(MIN.) =   1.56   Tc(MIN.) =  22.66
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.776
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 MOBILE HOME PARK           A       11.14      0.98      0.25    32
 PUBLIC PARK                A        6.85      0.98      0.85    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        3.99      0.98      0.60    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
 SUBAREA AREA(ACRES) =   21.98      SUBAREA RUNOFF(CFS) =   25.47
 EFFECTIVE AREA(ACRES) =    110.29    AREA-AVERAGED Fm(INCH/HR) =  0.49
 AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.50
 TOTAL AREA(ACRES) =    110.29        PEAK FLOW RATE(CFS) =     127.46
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  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.70   HALFSTREET FLOOD WIDTH(FEET) =  28.02
  FLOW VELOCITY(FEET/SEC.) =  7.75   DEPTH*VELOCITY(FT*FT/SEC.) =   5.43
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  713.7 FT WITH ELEVATION-DROP =  26.0 FT, IS   51.4 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20230.00
  LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20230.00 =  4372.37 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020230.0 TO NODE LR020231.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1800.00  DOWNSTREAM ELEVATION(FEET) = 1769.00
  STREET LENGTH(FEET) =   900.35   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.77

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     145.29
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.74
    HALFSTREET FLOOD WIDTH(FEET) =   29.86
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.83
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.77
  STREET FLOW TRAVEL TIME(MIN.) =   1.92   Tc(MIN.) =  24.58
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.691
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A       14.01      0.98      0.25    32
  MOBILE HOME PARK           B        8.21      0.75      0.25    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        2.69      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.23      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.88
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.32
  SUBAREA AREA(ACRES) =   28.14      SUBAREA RUNOFF(CFS) =   35.65
  EFFECTIVE AREA(ACRES) =    138.43    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.96  AREA-AVERAGED Ap =  0.47
  TOTAL AREA(ACRES) =    138.43        PEAK FLOW RATE(CFS) =     154.74

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53
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  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.75   HALFSTREET FLOOD WIDTH(FEET) =  30.59
  FLOW VELOCITY(FEET/SEC.) =  7.96   DEPTH*VELOCITY(FT*FT/SEC.) =   5.98
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  900.3 FT WITH ELEVATION-DROP =  31.0 FT, IS   66.2 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20231.00
  LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20231.00 =  5272.72 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020231.0 TO NODE LR020232.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1769.00  DOWNSTREAM ELEVATION(FEET) = 1739.00
  STREET LENGTH(FEET) =   905.39   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.78

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     164.38
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.77
    HALFSTREET FLOOD WIDTH(FEET) =   31.56
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.96
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.14
  STREET FLOW TRAVEL TIME(MIN.) =   1.90   Tc(MIN.) =  26.48
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.617
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A        0.17      0.98      0.25    32
  MOBILE HOME PARK           B        5.75      0.75      0.25    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       11.10      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.48
  SUBAREA AREA(ACRES) =   17.02      SUBAREA RUNOFF(CFS) =   19.29
  EFFECTIVE AREA(ACRES) =    155.45    AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.94  AREA-AVERAGED Ap =  0.47
  TOTAL AREA(ACRES) =    155.45        PEAK FLOW RATE(CFS) =     164.83

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.77   HALFSTREET FLOOD WIDTH(FEET) =  31.56
  FLOW VELOCITY(FEET/SEC.) =  7.98   DEPTH*VELOCITY(FT*FT/SEC.) =   6.15
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  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  905.4 FT WITH ELEVATION-DROP =  30.0 FT, IS   38.6 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20232.00
  LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20232.00 =  6178.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020232.0 TO NODE LR020232.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  26.48
  RAINFALL INTENSITY(INCH/HR) =   1.62
  AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.94
  AREA-AVERAGED Ap =  0.47
  EFFECTIVE STREAM AREA(ACRES) =   155.45
  TOTAL STREAM AREA(ACRES) =   155.45
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    164.83

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    179.59  28.47    1.548  0.96( 0.44) 0.46   170.9 LR020210.0
      1    169.53  32.46    1.431  0.96( 0.45) 0.46   181.7 LR020200.0
      2    164.83  26.48    1.617  0.94( 0.44) 0.47   155.4 LR020220.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    342.28  26.48    1.617  0.95( 0.44) 0.46   314.3 LR020220.0
      2    334.77  28.47    1.548  0.95( 0.44) 0.46   326.3 LR020210.0
      3    308.33  32.46    1.431  0.95( 0.44) 0.47   337.2 LR020200.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    342.28    Tc(MIN.) =    26.48
  EFFECTIVE AREA(ACRES) =   314.32   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.95  AREA-AVERAGED Ap =  0.46
  TOTAL AREA(ACRES) =    337.15
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20232.00 =  7433.97 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020232.0 TO NODE LR020249.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1739.00  DOWNSTREAM ELEVATION(FEET) = 1735.00
  STREET LENGTH(FEET) =  1274.82   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INCSIDE STREET CROSSFALL(DECIMAL) =  0.020
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  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     350.48
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.45
    HALFSTREET FLOOD WIDTH(FEET) =   71.26
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.75
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.44
  STREET FLOW TRAVEL TIME(MIN.) =   5.67   Tc(MIN.) =  32.15
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.440
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.11      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       18.30      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   18.41      SUBAREA RUNOFF(CFS) =   16.40
  EFFECTIVE AREA(ACRES) =    332.73    AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.94  AREA-AVERAGED Ap =  0.47
  TOTAL AREA(ACRES) =    355.56        PEAK FLOW RATE(CFS) =     342.28
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.44   HALFSTREET FLOOD WIDTH(FEET) =  70.65
  FLOW VELOCITY(FEET/SEC.) =  3.73   DEPTH*VELOCITY(FT*FT/SEC.) =   5.37

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.87
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  81.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.36
  PIPE-FLOW(CFS) =    299.51
  PIPEFLOW TRAVEL TIME(MIN.) =   2.54    Tc(MIN.) =  29.02
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.531
  SUBAREA AREA(ACRES) =   18.41      SUBAREA RUNOFF(CFS) =   17.92
  TOTAL AREA(ACRES) =    355.56        PEAK FLOW RATE(CFS) =    342.28
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   42.77
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
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    STREET FLOW DEPTH(FEET) =  0.78
    HALFSTREET FLOOD WIDTH(FEET) =   37.10
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.08
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.63
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20249.00 =  8708.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020249.0 TO NODE LR020249.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  29.02
  RAINFALL INTENSITY(INCH/HR) =   1.53
  AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.94
  AREA-AVERAGED Ap =  0.47
  EFFECTIVE STREAM AREA(ACRES) =   332.73
  TOTAL STREAM AREA(ACRES) =   355.56
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    342.28

****************************************************************************
  FLOW PROCESS FROM NODE LR020240.0 TO NODE LR020241.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   916.98
  ELEVATION DATA: UPSTREAM(FEET) =   1880.00  DOWNSTREAM(FEET) =   1855.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.964
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.483
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        4.79      0.98      0.60    32   12.96
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.77      0.75      0.60    56   12.96
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.88
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     15.08
  TOTAL AREA(ACRES) =      8.56   PEAK FLOW RATE(CFS) =     15.08

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020241.0 TO NODE LR020242.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1855.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1848.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   207.39
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
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  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.418
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.59      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.06      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.85
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     18.22
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.91
  AVERAGE FLOW DEPTH(FEET) =   0.53   FLOOD WIDTH(FEET) =   23.98
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.58   Tc(MIN.) =  13.55
  SUBAREA AREA(ACRES) =    3.65       SUBAREA RUNOFF(CFS) =    6.27
  EFFECTIVE AREA(ACRES) =   12.21     AREA-AVERAGED Fm(INCH/HR) =   0.52
  AREA-AVERAGED Fp(INCH/HR) =   0.87  AREA-AVERAGED Ap =   0.60
  TOTAL AREA(ACRES) =     12.21          PEAK FLOW RATE(CFS) =      20.85

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.54   FLOOD WIDTH(FEET) =   25.93
  FLOW VELOCITY(FEET/SEC.) =   5.97   DEPTH*VELOCITY(FT*FT/SEC) =   3.25
  LONGEST FLOWPATH FROM NODE  20240.00 TO NODE  20242.00 =  1124.37 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020242.0 TO NODE LR020243.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1848.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1840.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   276.91
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.334
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        2.48      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.59      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.59      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.83
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     26.29
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.66
  AVERAGE FLOW DEPTH(FEET) =   0.59   FLOOD WIDTH(FEET) =   30.71
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.82   Tc(MIN.) =  14.36
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  SUBAREA AREA(ACRES) =    6.66       SUBAREA RUNOFF(CFS) =   10.88
  EFFECTIVE AREA(ACRES) =   18.87     AREA-AVERAGED Fm(INCH/HR) =   0.52
  AREA-AVERAGED Fp(INCH/HR) =   0.85  AREA-AVERAGED Ap =   0.61
  TOTAL AREA(ACRES) =     18.87         PEAK FLOW RATE(CFS) =      30.82

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.61   FLOOD WIDTH(FEET) =   33.24
  FLOW VELOCITY(FEET/SEC.) =   5.78   DEPTH*VELOCITY(FT*FT/SEC) =   3.51
  LONGEST FLOWPATH FROM NODE  20240.00 TO NODE  20243.00 =  1401.28 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020243.0 TO NODE LR020244.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1840.00  DOWNSTREAM ELEVATION(FEET) = 1830.00
  STREET LENGTH(FEET) =   293.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.81

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      37.45
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.53
    HALFSTREET FLOOD WIDTH(FEET) =   18.71
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.08
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.70
  STREET FLOW TRAVEL TIME(MIN.) =   0.96   Tc(MIN.) =  15.33
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.245
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        3.29      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.18      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.12      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.83
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.64
  SUBAREA AREA(ACRES) =    8.59      SUBAREA RUNOFF(CFS) =   13.26
  EFFECTIVE AREA(ACRES) =     27.46    AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.85  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =     27.46        PEAK FLOW RATE(CFS) =      42.56

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
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  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.55   HALFSTREET FLOOD WIDTH(FEET) =  19.70
  FLOW VELOCITY(FEET/SEC.) =  5.23   DEPTH*VELOCITY(FT*FT/SEC.) =   2.89
  LONGEST FLOWPATH FROM NODE  20240.00 TO NODE  20244.00 =  1694.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020244.0 TO NODE LR020245.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1830.00  DOWNSTREAM ELEVATION(FEET) = 1815.00
  STREET LENGTH(FEET) =   273.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.73

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      48.34
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.54
    HALFSTREET FLOOD WIDTH(FEET) =   18.88
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.44
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.45
  STREET FLOW TRAVEL TIME(MIN.) =   0.71   Tc(MIN.) =  16.03
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.185
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        2.55      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.04      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.15      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.82
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.64
  SUBAREA AREA(ACRES) =    7.74      SUBAREA RUNOFF(CFS) =   11.55
  EFFECTIVE AREA(ACRES) =     35.20    AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.84  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =     35.20        PEAK FLOW RATE(CFS) =      52.63

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.55   HALFSTREET FLOOD WIDTH(FEET) =  19.53
  FLOW VELOCITY(FEET/SEC.) =  6.58   DEPTH*VELOCITY(FT*FT/SEC.) =   3.61
  LONGEST FLOWPATH FROM NODE  20240.00 TO NODE  20245.00 =  1967.78 FEET.
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****************************************************************************
  FLOW PROCESS FROM NODE LR020245.0 TO NODE LR020246.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1815.00  DOWNSTREAM ELEVATION(FEET) = 1805.00
  STREET LENGTH(FEET) =   359.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.85

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      59.86
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.63
    HALFSTREET FLOOD WIDTH(FEET) =   23.45
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.26
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.30
  STREET FLOW TRAVEL TIME(MIN.) =   1.14   Tc(MIN.) =  17.17
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.097
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        3.90      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.36      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.93      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.83
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
  SUBAREA AREA(ACRES) =   10.19      SUBAREA RUNOFF(CFS) =   14.45
  EFFECTIVE AREA(ACRES) =     45.39    AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.84  AREA-AVERAGED Ap =  0.63
  TOTAL AREA(ACRES) =     45.39        PEAK FLOW RATE(CFS) =      64.29

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.64   HALFSTREET FLOOD WIDTH(FEET) =  24.10
  FLOW VELOCITY(FEET/SEC.) =  5.36   DEPTH*VELOCITY(FT*FT/SEC.) =   3.43
  LONGEST FLOWPATH FROM NODE  20240.00 TO NODE  20246.00 =  2326.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020246.0 TO NODE LR020247.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
```



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============================================================================
  UPSTREAM ELEVATION(FEET) = 1805.00  DOWNSTREAM ELEVATION(FEET) = 1795.00
  STREET LENGTH(FEET) =   324.04   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.83

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      70.07
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.65
    HALFSTREET FLOOD WIDTH(FEET) =   24.45
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.68
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.68
  STREET FLOW TRAVEL TIME(MIN.) =   0.95   Tc(MIN.) =  18.12
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.031
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        3.02      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.88      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.55      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.83
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.62
  SUBAREA AREA(ACRES) =    8.45      SUBAREA RUNOFF(CFS) =   11.55
  EFFECTIVE AREA(ACRES) =     53.84    AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.84  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =     53.84        PEAK FLOW RATE(CFS) =      73.12

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.66   HALFSTREET FLOOD WIDTH(FEET) =  24.86
  FLOW VELOCITY(FEET/SEC.) =  5.74   DEPTH*VELOCITY(FT*FT/SEC.) =   3.76
  LONGEST FLOWPATH FROM NODE  20240.00 TO NODE  20247.00 =  2650.82 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020247.0 TO NODE LR020248.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1795.00  DOWNSTREAM ELEVATION(FEET) = 1782.00
  STREET LENGTH(FEET) =   263.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
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  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.74

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      78.10
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.62
    HALFSTREET FLOOD WIDTH(FEET) =   23.28
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.96
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.34
  STREET FLOW TRAVEL TIME(MIN.) =   0.63   Tc(MIN.) =  18.75
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.989
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.94      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.00      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.49      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.81
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.62
  SUBAREA AREA(ACRES) =    7.43      SUBAREA RUNOFF(CFS) =    9.96
  EFFECTIVE AREA(ACRES) =     61.27    AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.83  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =     61.27        PEAK FLOW RATE(CFS) =      81.09

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.63   HALFSTREET FLOOD WIDTH(FEET) =  23.63
  FLOW VELOCITY(FEET/SEC.) =  7.02   DEPTH*VELOCITY(FT*FT/SEC.) =   4.43
  LONGEST FLOWPATH FROM NODE  20240.00 TO NODE  20248.00 =  2913.82 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020248.0 TO NODE LR020249.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1782.00  DOWNSTREAM ELEVATION(FEET) = 1735.00
  STREET LENGTH(FEET) =  1589.51   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
```



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  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      94.07
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.70
    HALFSTREET FLOOD WIDTH(FEET) =   27.89
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.13
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.32
  STREET FLOW TRAVEL TIME(MIN.) =   4.32   Tc(MIN.) =  23.07
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.757
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.28      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       21.09      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.85      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.61
  SUBAREA AREA(ACRES) =   22.22      SUBAREA RUNOFF(CFS) =   25.95
  EFFECTIVE AREA(ACRES) =     83.49    AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.81  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =     83.49        PEAK FLOW RATE(CFS) =      94.21

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.70   HALFSTREET FLOOD WIDTH(FEET) =  27.89
  FLOW VELOCITY(FEET/SEC.) =  6.14   DEPTH*VELOCITY(FT*FT/SEC.) =   4.33
  LONGEST FLOWPATH FROM NODE  20240.00 TO NODE  20249.00 =  4503.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020249.0 TO NODE LR020249.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  23.07
  RAINFALL INTENSITY(INCH/HR) =   1.76
  AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.81
  AREA-AVERAGED Ap =  0.62
  EFFECTIVE STREAM AREA(ACRES) =    83.49
  TOTAL STREAM AREA(ACRES) =    83.49
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     94.21

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    342.28  29.02    1.531  0.94( 0.44) 0.47   332.7 LR020220.0
      1    334.77  31.08    1.469  0.94( 0.44) 0.47   344.7 LR020210.0
```

```
    1    308.33  35.13    1.365  0.94( 0.44) 0.47   355.6 LR020200.0
    2     94.21  23.07    1.757  0.81( 0.50) 0.62    83.5 LR020240.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
    1    422.80  23.07    1.757  0.90( 0.46) 0.51   348.0 LR020240.0
    2    419.52  29.02    1.531  0.91( 0.45) 0.50   416.2 LR020220.0
    3    407.36  31.08    1.469  0.91( 0.45) 0.50   428.2 LR020210.0
    4    373.10  35.13    1.365  0.91( 0.45) 0.50   439.1 LR020200.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    422.80    Tc(MIN.) =    23.07
  EFFECTIVE AREA(ACRES) =   348.03   AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.90  AREA-AVERAGED Ap =  0.51
  TOTAL AREA(ACRES) =    439.05
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20249.00 =  8708.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020249.0 TO NODE LR020250.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1735.00  DOWNSTREAM ELEVATION(FEET) = 1733.00
  STREET LENGTH(FEET) =   391.69   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     423.32
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.43
    HALFSTREET FLOOD WIDTH(FEET) =   69.92
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.72
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.72
  STREET FLOW TRAVEL TIME(MIN.) =   1.38   Tc(MIN.) =  24.45
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.696
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.58      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.42      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
```



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  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.73
  SUBAREA AREA(ACRES) =    1.00      SUBAREA RUNOFF(CFS) =    1.04
  EFFECTIVE AREA(ACRES) =    349.03    AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.90  AREA-AVERAGED Ap =  0.51
  TOTAL AREA(ACRES) =    440.05        PEAK FLOW RATE(CFS) =     422.80
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.43   HALFSTREET FLOOD WIDTH(FEET) =  69.92
  FLOW VELOCITY(FEET/SEC.) =  4.71   DEPTH*VELOCITY(FT*FT/SEC.) =   6.71

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 1.07
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  75.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.13
  PIPE-FLOW(CFS) =    311.17
  PIPEFLOW TRAVEL TIME(MIN.) =   0.64    Tc(MIN.) =  23.71
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.728
  SUBAREA AREA(ACRES) =    1.00      SUBAREA RUNOFF(CFS) =    1.07
  TOTAL AREA(ACRES) =    440.05        PEAK FLOW RATE(CFS) =    422.80
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  111.62
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.94
    HALFSTREET FLOOD WIDTH(FEET) =   45.87
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.28
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.10
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20250.00 =  9100.48 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020250.0 TO NODE LR020250.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020151.0 TO NODE LR020151.0 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME:  20151.dna
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1232.64    Tc(MIN.) =  38.75
  AREA-AVERAGED Fm(INCH/HR) =  0.61    Ybar = 0.60
  TOTAL AREA(ACRES) =    1725.04
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20151.00 = 15438.18 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR020151.0 TO NODE LR020151.0 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1232.64    Tc(MIN.) =  38.75
  AREA-AVERAGED Fm(INCH/HR) =  0.61    Ybar = 0.60
  TOTAL AREA(ACRES) =    1725.04
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20151.00 = 15438.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020151.0 TO NODE LR020151.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020151.0 TO NODE LR020250.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1785.00  DOWNSTREAM(FEET) =   1733.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1656.68   CHANNEL SLOPE =  0.0314
  CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   6.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   1232.64
  FLOW VELOCITY(FEET/SEC.) =  12.70   FLOW DEPTH(FEET) =   2.65
  TRAVEL TIME(MIN.) =   2.17   Tc(MIN.) =  40.92
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20250.00 = 17094.86 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020250.0 TO NODE LR020250.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  40.92
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.245
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.58      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       54.48      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.89
  SUBAREA AREA(ACRES) =   56.06
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.38;30M= 0.78;1H= 1.03;3H= 1.90;6H= 2.82;24H= 6.10
  S-GRAPH: VALLEY(DEV.)= 23.5%;VALLEY(UNDEV.)/DESERT= 76.5%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.68; LAG(HR) = 0.55; Fm(INCH/HR) = 0.61; Ybar = 0.60
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.92; 30M = 0.92; 1HR = 0.92;
  3HR = 0.99; 6HR = 0.99; 24HR= 1.00
```



```
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1781.10
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20250.00 = 17094.86 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0467; Lca/L=0.4,n=.0419; Lca/L=0.5,n=.0385;Lca/L=0.6,n=.0359
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     387.56
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1198.63
  TOTAL AREA(ACRES) =   1781.10       PEAK FLOW RATE(CFS) =    1232.64
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020250.0 TO NODE LR020250.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     1232.64    Tc(MIN.) =  40.92
  AREA-AVERAGED Fm(INCH/HR) =  0.61    Ybar = 0.60
  TOTAL AREA(ACRES) =    1781.10
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20250.00 = 17094.86 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    422.80  23.71    1.728  0.90( 0.46) 0.51   349.0 LR020240.0
      2    419.52  29.66    1.511  0.90( 0.45) 0.50   417.2 LR020220.0
      3    407.36  31.72    1.451  0.91( 0.45) 0.50   429.2 LR020210.0
      4    373.10  35.78    1.350  0.91( 0.45) 0.50   440.1 LR020200.0
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20250.00 =  9100.48 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.38;30M= 0.77;1H= 1.02;3H= 1.87;6H= 2.74;24H= 5.99
  S-GRAPH: VALLEY(DEV.)= 38.4%;VALLEY(UNDEV.)/DESERT= 61.6%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.68; LAG(HR) = 0.55; Fm(INCH/HR) = 0.58; Ybar = 0.58
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.90; 30M = 0.90; 1HR = 0.90;
  3HR = 0.99; 6HR = 0.99; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   2221.15
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20250.00 = 17094.86 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0467; Lca/L=0.4,n=.0419; Lca/L=0.5,n=.0385;Lca/L=0.6,n=.0359
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     494.73
  PEAK FLOW RATE(CFS) =    1517.60

****************************************************************************
  FLOW PROCESS FROM NODE LR020250.0 TO NODE LR020250.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020250.0 TO NODE LR020274.0 IS CODE =  54
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1733.00  DOWNSTREAM(FEET) =   1670.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2379.03   CHANNEL SLOPE =  0.0265
  CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   7.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   1517.60
  FLOW VELOCITY(FEET/SEC.) =  12.81   FLOW DEPTH(FEET) =   3.13
  TRAVEL TIME(MIN.) =   3.09   Tc(MIN.) =  44.02
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20274.00 = 19473.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020274.0 TO NODE LR020274.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  44.02
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.192
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.23      0.75      0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.07      0.98      0.60    32
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        9.49      0.75      0.90    56
  SCHOOL                     B       24.91      0.75      0.60    56
  SCHOOL                     A        0.90      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA AREA(ACRES) =   38.60
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.38;30M= 0.77;1H= 1.02;3H= 1.87;6H= 2.74;24H= 5.98
  S-GRAPH: VALLEY(DEV.)= 39.0%;VALLEY(UNDEV.)/DESERT= 61.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.73; LAG(HR) = 0.59; Fm(INCH/HR) = 0.58; Ybar = 0.58
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.90; 30M = 0.90; 1HR = 0.90;
  3HR = 0.98; 6HR = 0.99; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   2259.75
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20274.00 = 19473.89 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0448; Lca/L=0.4,n=.0401; Lca/L=0.5,n=.0369;Lca/L=0.6,n=.0344
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     503.40
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1466.76
  TOTAL AREA(ACRES) =   2259.75       PEAK FLOW RATE(CFS) =    1517.60
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020274.0 TO NODE LR020274.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
```



```
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =    1517.60    Tc(MIN.) =  44.02
  AREA-AVERAGED Fm(INCH/HR) =  0.58   Ybar = 0.58
  TOTAL AREA(ACRES) =    2259.75

****************************************************************************
  FLOW PROCESS FROM NODE LR020260.0 TO NODE LR020261.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   680.83
  ELEVATION DATA: UPSTREAM(FEET) =   2600.00  DOWNSTREAM(FEET) =   2360.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.333
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.494
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.43      0.61      1.00    66   11.82
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.14      0.75      0.70    56    7.33
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.65
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.90
  SUBAREA RUNOFF(CFS) =     17.21
  TOTAL AREA(ACRES) =      6.57   PEAK FLOW RATE(CFS) =     17.21

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020261.0 TO NODE LR020262.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2360.00  DOWNSTREAM(FEET) =   2280.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   583.76   CHANNEL SLOPE =  0.1370
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     17.21
  FLOW VELOCITY(FEET/SEC.) =   3.58   FLOW DEPTH(FEET) =   0.31
  TRAVEL TIME(MIN.) =   2.72   Tc(MIN.) =  10.05
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20262.00 =  1264.59 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020262.0 TO NODE LR020262.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  10.05
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.892
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.44      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       15.90      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.64
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.93
  SUBAREA AREA(ACRES) =   20.34      SUBAREA RUNOFF(CFS) =   42.07
  EFFECTIVE AREA(ACRES) =     26.91   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.64  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =     26.91       PEAK FLOW RATE(CFS) =      55.72

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020262.0 TO NODE LR020263.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2280.00  DOWNSTREAM(FEET) =   2170.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   994.37   CHANNEL SLOPE =  0.1106
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     55.72
  FLOW VELOCITY(FEET/SEC.) =   4.35   FLOW DEPTH(FEET) =   0.51
  TRAVEL TIME(MIN.) =   3.81   Tc(MIN.) =  13.86
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20263.00 =  2258.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020263.0 TO NODE LR020263.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  13.86
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.385
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        8.82      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =    8.82      SUBAREA RUNOFF(CFS) =   14.77
  EFFECTIVE AREA(ACRES) =     35.73   AREA-AVERAGED Fm(INCH/HR) =  0.58
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =     35.73       PEAK FLOW RATE(CFS) =      58.19

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020263.0 TO NODE LR020264.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2170.00  DOWNSTREAM(FEET) =   2110.00
```



```
  CHANNEL LENGTH THRU SUBAREA(FEET) =   784.49   CHANNEL SLOPE =  0.0765
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     58.19
  FLOW VELOCITY(FEET/SEC.) =   3.90   FLOW DEPTH(FEET) =   0.55
  TRAVEL TIME(MIN.) =   3.35   Tc(MIN.) =  17.22
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20264.00 =  3043.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020264.0 TO NODE LR020264.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.22
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.094
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       17.48      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        7.48      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.70
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.79
  SUBAREA AREA(ACRES) =   24.96      SUBAREA RUNOFF(CFS) =   34.67
  EFFECTIVE AREA(ACRES) =     60.69   AREA-AVERAGED Fm(INCH/HR) =  0.57
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     60.69       PEAK FLOW RATE(CFS) =      83.51

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020264.0 TO NODE LR020265.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2110.00  DOWNSTREAM(FEET) =   2080.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   660.96   CHANNEL SLOPE =  0.0454
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     83.51
  FLOW VELOCITY(FEET/SEC.) =   3.49   FLOW DEPTH(FEET) =   0.69
  TRAVEL TIME(MIN.) =   3.15   Tc(MIN.) =  20.37
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20265.00 =  3704.41 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020265.0 TO NODE LR020265.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  20.37
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.893
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
```

```
  "2 DWELLINGS/ACRE"         B        6.85      0.75      0.70    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.71      0.75      0.90    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       59.45      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.63
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.97
  SUBAREA AREA(ACRES) =   67.01      SUBAREA RUNOFF(CFS) =   77.65
  EFFECTIVE AREA(ACRES) =    127.70   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.65  AREA-AVERAGED Ap =  0.91
  TOTAL AREA(ACRES) =    127.70       PEAK FLOW RATE(CFS) =     150.18

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020265.0 TO NODE LR020266.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2080.00  DOWNSTREAM(FEET) =   2010.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   947.22   CHANNEL SLOPE =  0.0739
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    150.18
  FLOW VELOCITY(FEET/SEC.) =   4.83   FLOW DEPTH(FEET) =   0.79
  TRAVEL TIME(MIN.) =   3.27   Tc(MIN.) =  23.64
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20266.00 =  4651.63 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020266.0 TO NODE LR020266.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  23.64
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.731
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       10.89      0.75      0.70    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       11.99      0.75      0.90    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.30      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.72
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.84
  SUBAREA AREA(ACRES) =   27.18      SUBAREA RUNOFF(CFS) =   27.58
  EFFECTIVE AREA(ACRES) =    154.88   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.89
  TOTAL AREA(ACRES) =    154.88       PEAK FLOW RATE(CFS) =     159.17

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020266.0 TO NODE LR020267.0 IS CODE =  54
```



```
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2010.00  DOWNSTREAM(FEET) =   1960.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   906.98   CHANNEL SLOPE =  0.0551
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    159.17
  FLOW VELOCITY(FEET/SEC.) =   4.39   FLOW DEPTH(FEET) =   0.85
  TRAVEL TIME(MIN.) =   3.44   Tc(MIN.) =  27.08
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20267.00 =  5558.61 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020267.0 TO NODE LR020267.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  27.08
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.596
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       53.81      0.75      0.70    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       46.51      0.75      0.90    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       68.77      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.88
  SUBAREA AREA(ACRES) =  169.09      SUBAREA RUNOFF(CFS) =  151.27
  EFFECTIVE AREA(ACRES) =    323.97   AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.89
  TOTAL AREA(ACRES) =    323.97       PEAK FLOW RATE(CFS) =     291.52

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020267.0 TO NODE LR020268.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1960.00  DOWNSTREAM(FEET) =   1890.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1268.30   CHANNEL SLOPE =  0.0552
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    291.52
  FLOW VELOCITY(FEET/SEC.) =  10.15   FLOW DEPTH(FEET) =   2.04
  TRAVEL TIME(MIN.) =   2.08   Tc(MIN.) =  29.17
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20268.00 =  6826.91 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020268.0 TO NODE LR020268.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
```

```
================================================================================
  MAINLINE Tc(MIN) =  29.17
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.526
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       30.11      0.75      0.90    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        0.46      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.90
  SUBAREA AREA(ACRES) =   30.57      SUBAREA RUNOFF(CFS) =   23.53
  EFFECTIVE AREA(ACRES) =    354.54   AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.89
  TOTAL AREA(ACRES) =    354.54       PEAK FLOW RATE(CFS) =     294.83

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020268.0 TO NODE LR020269.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1890.00  DOWNSTREAM(FEET) =   1870.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   379.58   CHANNEL SLOPE =  0.0527
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    294.83
  FLOW VELOCITY(FEET/SEC.) =  10.02   FLOW DEPTH(FEET) =   2.08
  TRAVEL TIME(MIN.) =   0.63   Tc(MIN.) =  29.80
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20269.00 =  7206.49 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020269.0 TO NODE LR020269.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  29.80
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.507
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       17.99      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.04      0.75      0.60    56
  NATURAL FAIR COVER
  "OPEN BROWSE"              B       18.04      0.61      1.00    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       16.31      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.70
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.87
  SUBAREA AREA(ACRES) =   52.38      SUBAREA RUNOFF(CFS) =   42.46
  EFFECTIVE AREA(ACRES) =    406.92   AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.88
```



```
  TOTAL AREA(ACRES) =    406.92       PEAK FLOW RATE(CFS) =     331.07

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020269.0 TO NODE LR020270.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1870.00  DOWNSTREAM(FEET) =   1770.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2346.89   CHANNEL SLOPE =  0.0426
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    331.07
  FLOW VELOCITY(FEET/SEC.) =   9.64   FLOW DEPTH(FEET) =   2.34
  TRAVEL TIME(MIN.) =   4.06   Tc(MIN.) =  33.85
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20270.00 =  9553.38 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020270.0 TO NODE LR020270.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  33.85
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.396
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.45      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       71.00      0.75      0.90    56
  NATURAL FAIR COVER
  "OPEN BROWSE"              B        5.28      0.61      1.00    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       40.34      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.82
  SUBAREA AREA(ACRES) =  122.07      SUBAREA RUNOFF(CFS) =   86.18
  EFFECTIVE AREA(ACRES) =    528.99   AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.69  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =    528.99       PEAK FLOW RATE(CFS) =     376.56

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020270.0 TO NODE LR020271.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1770.00  DOWNSTREAM ELEVATION(FEET) = 1755.00
  STREET LENGTH(FEET) =   692.85   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00
```

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DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     427.44
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  1.13
  HALFSTREET FLOOD WIDTH(FEET) =   55.27
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.06
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    9.12
STREET FLOW TRAVEL TIME(MIN.) =   1.43   Tc(MIN.) =  35.29
*  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.361
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
".4 DWELLING/ACRE"         B      127.18      0.75      0.90    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B       11.00      0.75      0.60    56
RESIDENTIAL
"2 DWELLINGS/ACRE"         B       18.36      0.75      0.70    56
NATURAL FAIR COVER
"OPEN BRUSH"               B        0.17      0.61      1.00    66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.86
SUBAREA AREA(ACRES) =  156.71      SUBAREA RUNOFF(CFS) =  101.75
EFFECTIVE AREA(ACRES) =    685.70    AREA-AVERAGED Fm(INCH/HR) =  0.61
AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.87
TOTAL AREA(ACRES) =    685.70        PEAK FLOW RATE(CFS) =     461.98

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.16   HALFSTREET FLOOD WIDTH(FEET) =  56.62
FLOW VELOCITY(FEET/SEC.) =  8.24   DEPTH*VELOCITY(FT*FT/SEC.) =   9.55

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.87
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
ESTIMATED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  17.38
PIPE-FLOW(CFS) =    308.19
PIPEFLOW TRAVEL TIME(MIN.) =   0.66    Tc(MIN.) =  34.52
*  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.379
SUBAREA AREA(ACRES) =  156.71      SUBAREA RUNOFF(CFS) =  104.30
TOTAL AREA(ACRES) =    685.70        PEAK FLOW RATE(CFS) =    473.16

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
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5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  164.97
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.86
  HALFSTREET FLOOD WIDTH(FEET) =   41.84
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.12
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.28
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
       AND L =   692.8 FT WITH ELEVATION-DROP =  15.0 FT, IS  274.0 CFS,
       WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  20271.00
LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20271.00 = 10246.23 FEET.

****************************************************************************
FLOW PROCESS FROM NODE LR020270.0 TO NODE LR020271.0 IS CODE =  71
----------------------------------------------------------------------------
>>>>>PEAK FLOW RATE ESTIMATOR CHANGED TO UNIT-HYDROGRAPH METHOD<<<<<
>>>>>USING TIME-OF-CONCENTRATION OF LONGEST FLOWPATH<<<<<
============================================================================
UNIT-HYDROGRAPH DATA:
RAINFALL(INCH): 5M= 0.37;30M= 0.75;1H= 0.99;3H= 1.72;6H= 2.43;24H= 5.53
S-GRAPH: VALLEY(DEV.)= 28.6%;VALLEY(UNDEV.)/DESERT= 71.4%
         MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
Tc(HR) = 0.58; LAG(HR) = 0.46; Fm(INCH/HR) = 0.61; Ybar = 0.63
USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
3HR = 1.00; 6HR = 1.00; 24HR= 1.00
UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    685.70
LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20271.00 = 10246.23 FEET.
 EQUIVALENT BASIN FACTOR APPROXIMATIONS:
 Lca/L=0.3,n=.0581; Lca/L=0.4,n=.0521; Lca/L=0.5,n=.0478;Lca/L=0.6,n=.0446
TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     128.46
UNIT-HYDROGRAPH METHOD PEAK FLOW RATE(CFS) =    518.91
TOTAL PEAK FLOW RATE(CFS) =    518.91 (SOURCE FLOW INCLUDED)
RATIONAL METHOD PEAK FLOW RATE(CFS) =    473.16
 (UPSTREAM NODE PEAK FLOW RATE(CFS) =    473.16)
PEAK FLOW RATE(CFS) USED =    518.91

****************************************************************************
FLOW PROCESS FROM NODE LR020271.0 TO NODE LR020272.0 IS CODE =  63
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 1755.00  DOWNSTREAM ELEVATION(FEET) = 1730.00
STREET LENGTH(FEET) =  1359.40   CURB HEIGHT(INCHES) =  8.0
STREET HALFWIDTH(FEET) = 32.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.98
```

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  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     547.82
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  1.26
  HALFSTREET FLOOD WIDTH(FEET) =   61.44
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.12
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   10.20
STREET FLOW TRAVEL TIME(MIN.) =   2.79   Tc(MIN.) =  37.31
*  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.317
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
".4 DWELLING/ACRE"         B       92.29      0.75      0.90    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        5.58      0.75      0.60    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.88
UNIT-HYDROGRAPH DATA:
RAINFALL(INCH): 5M= 0.37;30M= 0.75;1H= 0.99;3H= 1.72;6H= 2.43;24H= 5.53
S-GRAPH: VALLEY(DEV.)= 25.8%;VALLEY(UNDEV.)/DESERT= 74.2%
         MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
Tc(HR) = 0.62; LAG(HR) = 0.50; Fm(INCH/HR) = 0.62; Ybar = 0.63
USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
3HR = 0.99; 6HR = 1.00; 24HR= 1.00
UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    783.57
LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20272.00 = 10246.23 FEET.
 EQUIVALENT BASIN FACTOR APPROXIMATIONS:
 Lca/L=0.3,n=.0631; Lca/L=0.4,n=.0566; Lca/L=0.5,n=.0520;Lca/L=0.6,n=.0485
TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     144.58
UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    558.30
TOTAL AREA(ACRES) =    783.57        PEAK FLOW RATE(CFS) =     558.30

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.26   HALFSTREET FLOOD WIDTH(FEET) =  61.86
FLOW VELOCITY(FEET/SEC.) =  8.15   DEPTH*VELOCITY(FT*FT/SEC.) =  10.30

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.98
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
ESTIMATED PIPE DIAMETER(INCH) =  63.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  17.12
PIPE-FLOW(CFS) =    370.94
PIPEFLOW TRAVEL TIME(MIN.) =   1.32    Tc(MIN.) =  35.84
UNIT-HYDROGRAPH DATA:
RAINFALL(INCH): 5M= 0.37;30M= 0.75;1H= 0.99;3H= 1.72;6H= 2.43;24H= 5.53
S-GRAPH: VALLEY(DEV.)= 25.8%;VALLEY(UNDEV.)/DESERT= 74.2%
         MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
Tc(HR) = 0.58; LAG(HR) = 0.46; Fm(INCH/HR) = 0.62; Ybar = 0.63
USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
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3HR = 0.99; 6HR = 1.00; 24HR= 1.00
UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    783.57
LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20272.00 = 11605.63 FEET.
 EQUIVALENT BASIN FACTOR APPROXIMATIONS:
 Lca/L=0.3,n=.0519; Lca/L=0.4,n=.0465; Lca/L=0.5,n=.0427;Lca/L=0.6,n=.0399
TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     144.58
TOTAL AREA(ACRES) =    783.57        PEAK FLOW RATE(CFS) =    572.70

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  201.76
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.93
  HALFSTREET FLOOD WIDTH(FEET) =   45.20
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.15
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.72

****************************************************************************
  FLOW PROCESS FROM NODE LR020272.0 TO NODE LR020273.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1730.00  DOWNSTREAM ELEVATION(FEET) = 1695.00
  STREET LENGTH(FEET) =  1247.53   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.82

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     588.77
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.22
    HALFSTREET FLOOD WIDTH(FEET) =   54.03
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.96
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   12.16
  STREET FLOW TRAVEL TIME(MIN.) =   2.09   Tc(MIN.) =  37.93
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.304
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.91      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       52.68      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.88
  UNIT-HYDROGRAPH DATA:
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 RAINFALL(INCH): 5M= 0.37;30M= 0.75;1H= 0.99;3H= 1.72;6H= 2.43;24H= 5.53
 S-GRAPH: VALLEY(DEV.)= 24.4%;VALLEY(UNDEV.)/DESERT= 75.6%
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
 Tc(HR) = 0.63; LAG(HR) = 0.51; Fm(INCH/HR) = 0.62; Ybar = 0.64
 USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
 DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
 3HR = 0.99; 6HR = 1.00; 24HR= 1.00
 UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    839.16
 LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20273.00 = 11605.63 FEET.
  EQUIVALENT BASIN FACTOR APPROXIMATIONS:
  Lca/L=0.3,n=.0574; Lca/L=0.4,n=.0515; Lca/L=0.5,n=.0473;Lca/L=0.6,n=.0441
 TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     153.70
 UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    587.18
 TOTAL AREA(ACRES) =    839.16        PEAK FLOW RATE(CFS) =     587.18

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 1.22   HALFSTREET FLOOD WIDTH(FEET) =  53.96
 FLOW VELOCITY(FEET/SEC.) =  9.96   DEPTH*VELOCITY(FT*FT/SEC.) =  12.14

 *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
        THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.82
 SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
 ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
 ESTIMATED PIPE DIAMETER(INCH) =  63.00    NUMBER OF PIPES =   1
 ASSUME FULL-FLOWING PIPELINE
 PIPE-FLOW VELOCITY(FEET/SEC.) =  21.15
 PIPE-FLOW(CFS) =    458.16
 PIPEFLOW TRAVEL TIME(MIN.) =   0.98    Tc(MIN.) =  36.83
 UNIT-HYDROGRAPH DATA:
 RAINFALL(INCH): 5M= 0.37;30M= 0.75;1H= 0.99;3H= 1.72;6H= 2.43;24H= 5.53
 S-GRAPH: VALLEY(DEV.)= 24.4%;VALLEY(UNDEV.)/DESERT= 75.6%
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
 Tc(HR) = 0.60; LAG(HR) = 0.48; Fm(INCH/HR) = 0.62; Ybar = 0.64
 USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
 DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
 3HR = 0.99; 6HR = 1.00; 24HR= 1.00
 UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    839.16
 LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20273.00 = 12853.16 FEET.
  EQUIVALENT BASIN FACTOR APPROXIMATIONS:
  Lca/L=0.3,n=.0493; Lca/L=0.4,n=.0442; Lca/L=0.5,n=.0406;Lca/L=0.6,n=.0379
 TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     153.70
 TOTAL AREA(ACRES) =    839.16        PEAK FLOW RATE(CFS) =    598.54

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  140.38
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.75
   HALFSTREET FLOOD WIDTH(FEET) =   30.65
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.19
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.42

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 FLOW PROCESS FROM NODE LR020273.0 TO NODE LR020274.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1695.00  DOWNSTREAM ELEVATION(FEET) = 1670.00
 STREET LENGTH(FEET) =   797.55   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.79

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     599.49
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  1.20
   HALFSTREET FLOOD WIDTH(FEET) =   53.23
   AVERAGE FLOW VELOCITY(FEET/SEC.) =   10.44
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   12.58
 STREET FLOW TRAVEL TIME(MIN.) =   1.27   Tc(MIN.) =  38.10
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.300
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 ".4 DWELLING/ACRE"          B        2.08      0.75      0.90    56
 SCHOOL                      B        0.94      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.81
 UNIT-HYDROGRAPH DATA:
 RAINFALL(INCH): 5M= 0.37;30M= 0.75;1H= 0.99;3H= 1.72;6H= 2.43;24H= 5.53
 S-GRAPH: VALLEY(DEV.)= 24.4%;VALLEY(UNDEV.)/DESERT= 75.6%
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
 Tc(HR) = 0.63; LAG(HR) = 0.51; Fm(INCH/HR) = 0.62; Ybar = 0.64
 USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
 DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
 3HR = 0.99; 6HR = 1.00; 24HR= 1.00
 UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    842.18
 LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20274.00 = 12853.16 FEET.
  EQUIVALENT BASIN FACTOR APPROXIMATIONS:
  Lca/L=0.3,n=.0526; Lca/L=0.4,n=.0472; Lca/L=0.5,n=.0433;Lca/L=0.6,n=.0404
 TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     154.27
 UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    587.30
 TOTAL AREA(ACRES) =    842.18        PEAK FLOW RATE(CFS) =     598.54
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 1.20   HALFSTREET FLOOD WIDTH(FEET) =  53.17
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```
  FLOW VELOCITY(FEET/SEC.) = 10.45   DEPTH*VELOCITY(FT*FT/SEC.) =  12.58

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.79
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  63.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  22.35
  PIPE-FLOW(CFS) =    484.29
  PIPEFLOW TRAVEL TIME(MIN.) =   0.59    Tc(MIN.) =  37.42
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.37;30M= 0.75;1H= 0.99;3H= 1.72;6H= 2.43;24H= 5.53
  S-GRAPH: VALLEY(DEV.)= 24.4%;VALLEY(UNDEV.)/DESERT= 75.6%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.61; LAG(HR) = 0.49; Fm(INCH/HR) = 0.62; Ybar = 0.64
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    842.18
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20274.00 = 13650.71 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0480; Lca/L=0.4,n=.0431; Lca/L=0.5,n=.0396;Lca/L=0.6,n=.0369
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     154.27
  TOTAL AREA(ACRES) =    842.18        PEAK FLOW RATE(CFS) =    598.54
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.37; 30M = 0.75; 1HR = 0.99; 3HR = 1.72; 6HR = 2.43; 24HR = 5.53
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  114.26
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.69
    HALFSTREET FLOOD WIDTH(FEET) =   27.66
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.13
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.94

****************************************************************************
  FLOW PROCESS FROM NODE LR020274.0 TO NODE LR020274.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  PEAK FLOW RATE(CFS) =     598.54    Tc(MIN.) =  37.42
  AREA-AVERAGED Fm(INCH/HR) =  0.62   Ybar = 0.64
  TOTAL AREA(ACRES) =     842.18
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1      1517.60   44.02     2259.75  LR020120.0
     2       598.54   37.42      842.18  LR020260.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.38;30M= 0.77;1H= 1.01;3H= 1.83;6H= 2.65;24H= 5.86
```



```
  S-GRAPH: VALLEY(DEV.)= 35.0%;VALLEY(UNDEV.)/DESERT= 65.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.73; LAG(HR) = 0.59; Fm(INCH/HR) = 0.59; Ybar = 0.59
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.86; 30M = 0.86; 1HR = 0.86;
  3HR = 0.98; 6HR = 0.99; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   3101.93
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20274.00 = 19473.89 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0448; Lca/L=0.4,n=.0401; Lca/L=0.5,n=.0369;Lca/L=0.6,n=.0344
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     650.71
  PEAK FLOW RATE(CFS) =   1865.50

****************************************************************************
  FLOW PROCESS FROM NODE LR020274.0 TO NODE LR020274.0 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20274.dna
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =   3101.93  TC(MIN.) =     44.02
  AREA-AVERAGED Fm(INCH/HR)=  0.59   Ybar =  0.59
  PEAK FLOW RATE(CFS)   =   1865.50
============================================================================
============================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

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 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                          San Bernardino County
                    Transportation/ Flood Control Department

                          Water Resources Division

 ************************* DESCRIPTION OF STUDY *************************
* LR 0203ZZ FILE                                                       *
*  25-YEAR STORM                                                       *
*                                                                      *
 ************************************************************************

  FILE NAME: LR0203ZZ.Z25
  TIME/DATE OF STUDY: 11:26 02/23/2006
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 0.9700

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
```



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 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


************************************************************************
  FLOW PROCESS FROM NODE LR020300.0 TO NODE LR020301.0 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   658.37
  ELEVATION DATA: UPSTREAM(FEET) =   2600.00  DOWNSTREAM(FEET) =   2400.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.287
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.181
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        6.22      0.61      1.00    66   12.01
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.99      0.75      0.90    56    8.29
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.63
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.99
  SUBAREA RUNOFF(CFS) =     16.61
  TOTAL AREA(ACRES) =      7.21   PEAK FLOW RATE(CFS) =     16.61

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

************************************************************************
  FLOW PROCESS FROM NODE LR020301.0 TO NODE LR020302.0 IS CODE =  54
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2400.00  DOWNSTREAM(FEET) =   2380.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   422.45   CHANNEL SLOPE =  0.0473
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
```

```
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     16.61
  FLOW VELOCITY(FEET/SEC.) =   2.34   FLOW DEPTH(FEET) =   0.38
  TRAVEL TIME(MIN.) =   3.01   Tc(MIN.) =  11.30
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20302.00 =  1080.82 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020302.0 TO NODE LR020302.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  11.30
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.642
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.12      0.75      0.90    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.14      0.61      1.00    66
  SCHOOL                     B        3.66      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.66
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.81
  SUBAREA AREA(ACRES) =    7.92      SUBAREA RUNOFF(CFS) =   14.99
  EFFECTIVE AREA(ACRES) =     15.13   AREA-AVERAGED Fm(INCH/HR) =  0.58
  AREA-AVERAGED Fp(INCH/HR) =  0.65  AREA-AVERAGED Ap =  0.90
  TOTAL AREA(ACRES) =     15.13       PEAK FLOW RATE(CFS) =      28.10

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020302.0 TO NODE LR020303.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2380.00  DOWNSTREAM(FEET) =   2320.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   870.68   CHANNEL SLOPE =  0.0689
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     28.10
  FLOW VELOCITY(FEET/SEC.) =   3.12   FLOW DEPTH(FEET) =   0.42
  TRAVEL TIME(MIN.) =   4.65   Tc(MIN.) =  15.95
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20303.00 =  1951.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020303.0 TO NODE LR020303.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  15.95
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.148
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.15      0.61      1.00    66
```



```
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.80      0.75      0.90    56
  SCHOOL                     B       20.38      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.72
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   25.33      SUBAREA RUNOFF(CFS) =   37.96
  EFFECTIVE AREA(ACRES) =     40.46   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.76
  TOTAL AREA(ACRES) =     40.46       PEAK FLOW RATE(CFS) =      59.34

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020303.0 TO NODE LR020304.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2320.00  DOWNSTREAM(FEET) =   2280.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   981.07   CHANNEL SLOPE =  0.0408
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     59.34
  FLOW VELOCITY(FEET/SEC.) =   3.06   FLOW DEPTH(FEET) =   0.62
  TRAVEL TIME(MIN.) =   5.34   Tc(MIN.) =  21.29
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20304.00 =  2932.57 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020304.0 TO NODE LR020304.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.29
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.806
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       18.37      0.61      1.00    66
  SCHOOL                     B       15.66      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.66
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.82
  SUBAREA AREA(ACRES) =   34.03      SUBAREA RUNOFF(CFS) =   38.84
  EFFECTIVE AREA(ACRES) =     74.49   AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.78
  TOTAL AREA(ACRES) =     74.49       PEAK FLOW RATE(CFS) =      85.73

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020304.0 TO NODE LR020305.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2280.00  DOWNSTREAM(FEET) =   2220.00
```

```
  CHANNEL LENGTH THRU SUBAREA(FEET) =   823.37   CHANNEL SLOPE =  0.0729
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     85.73
  FLOW VELOCITY(FEET/SEC.) =   4.14   FLOW DEPTH(FEET) =   0.64
  TRAVEL TIME(MIN.) =   3.32   Tc(MIN.) =  24.61
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20305.00 =  3755.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020305.0 TO NODE LR020305.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  24.61
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.656
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        9.94      0.61      1.00    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        0.01      0.75      0.70    56
  SCHOOL                     B        7.91      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.66
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.82
  SUBAREA AREA(ACRES) =   17.86      SUBAREA RUNOFF(CFS) =   17.92
  EFFECTIVE AREA(ACRES) =     92.35   AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =     92.35       PEAK FLOW RATE(CFS) =      93.58

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020305.0 TO NODE LR020306.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2220.00  DOWNSTREAM(FEET) =   2190.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   801.97   CHANNEL SLOPE =  0.0374
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     93.58
  FLOW VELOCITY(FEET/SEC.) =   3.32   FLOW DEPTH(FEET) =   0.75
  TRAVEL TIME(MIN.) =   4.02   Tc(MIN.) =  28.63
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20306.00 =  4557.91 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020306.0 TO NODE LR020306.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  28.63
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.512
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```



```
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.66      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       13.33      0.61      1.00    66
  SCHOOL                     B        2.17      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.63
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.92
  SUBAREA AREA(ACRES) =   17.16      SUBAREA RUNOFF(CFS) =   14.33
  EFFECTIVE AREA(ACRES) =    109.51   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =    109.51       PEAK FLOW RATE(CFS) =      95.95

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020306.0 TO NODE LR020307.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2190.00  DOWNSTREAM(FEET) =   2185.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   181.13   CHANNEL SLOPE =  0.0276
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     95.95
  FLOW VELOCITY(FEET/SEC.) =   2.97   FLOW DEPTH(FEET) =   0.80
  TRAVEL TIME(MIN.) =   1.02   Tc(MIN.) =  29.65
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20307.00 =  4739.04 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020307.0 TO NODE LR020307.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  29.65
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.481
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.33      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.26      0.75      0.60    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.26      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.65
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.90
  SUBAREA AREA(ACRES) =    4.85      SUBAREA RUNOFF(CFS) =    3.93
  EFFECTIVE AREA(ACRES) =    114.36   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.82
  TOTAL AREA(ACRES) =    114.36       PEAK FLOW RATE(CFS) =      96.79

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020307.0 TO NODE LR020308.0 IS CODE =  54
```

```
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2185.00  DOWNSTREAM(FEET) =   2175.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   269.83   CHANNEL SLOPE =  0.0371
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   4.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     96.79
  FLOW VELOCITY(FEET/SEC.) =   3.35   FLOW DEPTH(FEET) =   0.76
  TRAVEL TIME(MIN.) =   1.34   Tc(MIN.) =  30.99
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20308.00 =  5008.87 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020308.0 TO NODE LR020308.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  30.99
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.442
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.10      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.65      0.75      0.60    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.26      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.78
  SUBAREA AREA(ACRES) =    4.01      SUBAREA RUNOFF(CFS) =    3.26
  EFFECTIVE AREA(ACRES) =    118.37   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =    118.37       PEAK FLOW RATE(CFS) =      96.79
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020308.0 TO NODE LR020309.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2175.00  DOWNSTREAM ELEVATION(FEET) = 2150.00
  STREET LENGTH(FEET) =   430.92   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
```



```
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.67

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      98.98
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.61
    HALFSTREET FLOOD WIDTH(FEET) =   23.26
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.57
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.18
  STREET FLOW TRAVEL TIME(MIN.) =   0.84   Tc(MIN.) =  31.83
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.419
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.71      0.61      1.00    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.80      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.00      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.77
  SUBAREA AREA(ACRES) =    5.51      SUBAREA RUNOFF(CFS) =    4.37
  EFFECTIVE AREA(ACRES) =    123.88    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =    123.88       PEAK FLOW RATE(CFS) =      97.98

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.60   HALFSTREET FLOOD WIDTH(FEET) =  23.20
  FLOW VELOCITY(FEET/SEC.) =  8.52   DEPTH*VELOCITY(FT*FT/SEC.) =   5.15
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20309.00 =  5439.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020309.0 TO NODE LR020310.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2150.00  DOWNSTREAM ELEVATION(FEET) = 2140.00
  STREET LENGTH(FEET) =   330.10   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.80

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     100.07
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
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```
  STREET FLOW DEPTH(FEET) =  0.67
  HALFSTREET FLOOD WIDTH(FEET) =   26.44
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.80
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.55
STREET FLOW TRAVEL TIME(MIN.) =   0.81   Tc(MIN.) =  32.63
*  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.398
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"2 DWELLINGS/ACRE"         B        3.69      0.75      0.70    56
NATURAL FAIR COVER
"OPEN BRUSH"               B        0.85      0.61      1.00    66
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        0.79      0.75      0.60    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.72
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.73
SUBAREA AREA(ACRES) =    5.33      SUBAREA RUNOFF(CFS) =    4.18
EFFECTIVE AREA(ACRES) =    129.21    AREA-AVERAGED Fm(INCH/HR) =  0.54
AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.81
TOTAL AREA(ACRES) =    129.21        PEAK FLOW RATE(CFS) =      99.80

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.67   HALFSTREET FLOOD WIDTH(FEET) =  26.44
FLOW VELOCITY(FEET/SEC.) =  6.78   DEPTH*VELOCITY(FT*FT/SEC.) =   4.54
LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20310.00 =  5769.89 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020310.0 TO NODE LR020311.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2140.00  DOWNSTREAM ELEVATION(FEET) = 2100.00
 STREET LENGTH(FEET) =   329.50   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.56

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     101.76
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.55
   HALFSTREET FLOOD WIDTH(FEET) =   20.52
   AVERAGE FLOW VELOCITY(FEET/SEC.) =   11.12
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.12
 STREET FLOW TRAVEL TIME(MIN.) =   0.49   Tc(MIN.) =  33.13
```



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*  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.385
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"2 DWELLINGS/ACRE"         B        2.87      0.75      0.70    56
NATURAL FAIR COVER
"OPEN BRUSH"               B        1.50      0.61      1.00    66
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        0.78      0.75      0.60    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.70
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.77
SUBAREA AREA(ACRES) =    5.15      SUBAREA RUNOFF(CFS) =    3.92
EFFECTIVE AREA(ACRES) =    134.36    AREA-AVERAGED Fm(INCH/HR) =  0.54
AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.81
TOTAL AREA(ACRES) =    134.36        PEAK FLOW RATE(CFS) =     102.26

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.55   HALFSTREET FLOOD WIDTH(FEET) =  20.58
FLOW VELOCITY(FEET/SEC.) = 11.12   DEPTH*VELOCITY(FT*FT/SEC.) =   6.13
LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20311.00 =  6099.39 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020311.0 TO NODE LR020312.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2100.00  DOWNSTREAM ELEVATION(FEET) = 2060.00
 STREET LENGTH(FEET) =   476.59   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.61

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     106.12
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.59
   HALFSTREET FLOOD WIDTH(FEET) =   22.29
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.95
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.83
 STREET FLOW TRAVEL TIME(MIN.) =   0.80   Tc(MIN.) =  33.93
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.366
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
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  "2 DWELLINGS/ACRE"         B        4.27      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        5.25      0.61      1.00    66
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.13      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.84
  SUBAREA AREA(ACRES) =   10.65      SUBAREA RUNOFF(CFS) =    7.72
  EFFECTIVE AREA(ACRES) =    145.01    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =    145.01        PEAK FLOW RATE(CFS) =     107.61

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.59   HALFSTREET FLOOD WIDTH(FEET) =  22.41
  FLOW VELOCITY(FEET/SEC.) =  9.99   DEPTH*VELOCITY(FT*FT/SEC.) =   5.87
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20312.00 =  6575.98 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020312.0 TO NODE LR020313.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2060.00  DOWNSTREAM ELEVATION(FEET) = 2040.00
  STREET LENGTH(FEET) =   500.29   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.74

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     111.37
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.66
    HALFSTREET FLOOD WIDTH(FEET) =   26.13
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.74
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.13
  STREET FLOW TRAVEL TIME(MIN.) =   1.08   Tc(MIN.) =  35.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.340
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.45      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.19      0.75      0.60    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.82      0.61      1.00    66
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  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.70
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.77
  SUBAREA AREA(ACRES) =   10.46      SUBAREA RUNOFF(CFS) =    7.54
  EFFECTIVE AREA(ACRES) =    155.47    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =    155.47        PEAK FLOW RATE(CFS) =     111.83

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.66   HALFSTREET FLOOD WIDTH(FEET) =  26.19
  FLOW VELOCITY(FEET/SEC.) =  7.74   DEPTH*VELOCITY(FT*FT/SEC.) =   5.14
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20313.00 =  7076.27 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020313.0 TO NODE LR020314.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2040.00  DOWNSTREAM ELEVATION(FEET) = 2020.00
  STREET LENGTH(FEET) =   462.82   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.73

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     115.52
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.66
    HALFSTREET FLOOD WIDTH(FEET) =   26.13
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.03
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.32
  STREET FLOW TRAVEL TIME(MIN.) =   0.96   Tc(MIN.) =  35.96
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.319
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.76      0.61      1.00    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.77      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.10      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.80
  SUBAREA AREA(ACRES) =   10.63      SUBAREA RUNOFF(CFS) =    7.37
  EFFECTIVE AREA(ACRES) =    166.10    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.81
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  TOTAL AREA(ACRES) =    166.10        PEAK FLOW RATE(CFS) =     116.18

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.66   HALFSTREET FLOOD WIDTH(FEET) =  26.19
  FLOW VELOCITY(FEET/SEC.) =  8.04   DEPTH*VELOCITY(FT*FT/SEC.) =   5.34
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20314.00 =  7539.09 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020314.0 TO NODE LR020315.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2020.00  DOWNSTREAM ELEVATION(FEET) = 1980.00
  STREET LENGTH(FEET) =   511.41   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.62

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     119.38
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.61
    HALFSTREET FLOOD WIDTH(FEET) =   23.63
    AVERAGE FLOW VELOCITY(FEET/SEC.) =   10.03
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.15
  STREET FLOW TRAVEL TIME(MIN.) =   0.85   Tc(MIN.) =  36.81
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.300
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.85      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.24      0.75      0.60    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.05      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.73
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.72
  SUBAREA AREA(ACRES) =    9.14      SUBAREA RUNOFF(CFS) =    6.39
  EFFECTIVE AREA(ACRES) =    175.24    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =    175.24        PEAK FLOW RATE(CFS) =     119.83

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53
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  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.61   HALFSTREET FLOOD WIDTH(FEET) =  23.63
  FLOW VELOCITY(FEET/SEC.) = 10.07   DEPTH*VELOCITY(FT*FT/SEC.) =   6.17
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20315.00 =  8050.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020315.0 TO NODE LR020316.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1980.00  DOWNSTREAM ELEVATION(FEET) = 1950.00
  STREET LENGTH(FEET) =   522.61   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.67

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     122.38
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.65
    HALFSTREET FLOOD WIDTH(FEET) =   25.28
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.06
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.85
  STREET FLOW TRAVEL TIME(MIN.) =   0.96   Tc(MIN.) =  37.78
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.280
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.12      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.25      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    7.37      SUBAREA RUNOFF(CFS) =    5.10
  EFFECTIVE AREA(ACRES) =    182.61    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =    182.61        PEAK FLOW RATE(CFS) =     121.79

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.64   HALFSTREET FLOOD WIDTH(FEET) =  25.22
  FLOW VELOCITY(FEET/SEC.) =  9.06   DEPTH*VELOCITY(FT*FT/SEC.) =   5.83
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20316.00 =  8573.11 FEET.

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  FLOW PROCESS FROM NODE LR020316.0 TO NODE LR020317.0 IS CODE =  63
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------------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
==============================================================================
  UPSTREAM ELEVATION(FEET) = 1950.00  DOWNSTREAM ELEVATION(FEET) = 1890.00
  STREET LENGTH(FEET) =   743.58   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.62

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     123.70
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.62
    HALFSTREET FLOOD WIDTH(FEET) =   23.81
    AVERAGE FLOW VELOCITY(FEET/SEC.) =   10.25
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.31
  STREET FLOW TRAVEL TIME(MIN.) =   1.21   Tc(MIN.) =  38.99
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.256
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.10      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.55      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.01      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA AREA(ACRES) =    5.66      SUBAREA RUNOFF(CFS) =    3.84
  EFFECTIVE AREA(ACRES) =    188.27    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =    188.27        PEAK FLOW RATE(CFS) =     121.79
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.61   HALFSTREET FLOOD WIDTH(FEET) =  23.69
  FLOW VELOCITY(FEET/SEC.) = 10.19   DEPTH*VELOCITY(FT*FT/SEC.) =   6.25
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20317.00 =  9316.69 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020317.0 TO NODE LR020318.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
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  UPSTREAM ELEVATION(FEET) = 1890.00  DOWNSTREAM ELEVATION(FEET) = 1860.00
  STREET LENGTH(FEET) =   640.63   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.71

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     125.66
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.67
    HALFSTREET FLOOD WIDTH(FEET) =   26.56
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.47
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.68
  STREET FLOW TRAVEL TIME(MIN.) =   1.26   Tc(MIN.) =  40.25
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.233
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.10      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.01      0.75      0.90    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       10.92      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =   12.03      SUBAREA RUNOFF(CFS) =    7.75
  EFFECTIVE AREA(ACRES) =    200.30    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =    200.30        PEAK FLOW RATE(CFS) =     125.40

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.67   HALFSTREET FLOOD WIDTH(FEET) =  26.56
  FLOW VELOCITY(FEET/SEC.) =  8.45   DEPTH*VELOCITY(FT*FT/SEC.) =   5.67
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20318.00 =  9957.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020318.0 TO NODE LR020319.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
==============================================================================
  UPSTREAM ELEVATION(FEET) = 1860.00  DOWNSTREAM ELEVATION(FEET) = 1835.00
  STREET LENGTH(FEET) =   624.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
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INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.78

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     172.80
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.79
  HALFSTREET FLOOD WIDTH(FEET) =   32.41
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.31
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.61
STREET FLOW TRAVEL TIME(MIN.) =   1.25   Tc(MIN.) =  41.50
*  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.210
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        1.46      0.75      0.60    56
RESIDENTIAL
".4 DWELLING/ACRE"         B        9.05      0.75      0.90    56
RESIDENTIAL
"2 DWELLINGS/ACRE"         B      128.82      0.75      0.70    56
NATURAL FAIR COVER
"OPEN BRUSH"               B       18.27      0.61      1.00    66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.73
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.75
SUBAREA AREA(ACRES) =  157.60      SUBAREA RUNOFF(CFS) =   94.78
EFFECTIVE AREA(ACRES) =    357.90    AREA-AVERAGED Fm(INCH/HR) =  0.54
AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.77
TOTAL AREA(ACRES) =    357.90        PEAK FLOW RATE(CFS) =     216.14

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.85   HALFSTREET FLOOD WIDTH(FEET) =  34.97
FLOW VELOCITY(FEET/SEC.) =  8.92   DEPTH*VELOCITY(FT*FT/SEC.) =   7.55

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.78
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  14.36
PIPE-FLOW(CFS) =     57.15
PIPEFLOW TRAVEL TIME(MIN.) =   0.72    Tc(MIN.) =  40.97
*  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.219
SUBAREA AREA(ACRES) =  157.60      SUBAREA RUNOFF(CFS) =   96.10
TOTAL AREA(ACRES) =    357.90        PEAK FLOW RATE(CFS) =    219.14

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53
```



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  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  161.99
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.78
    HALFSTREET FLOOD WIDTH(FEET) =   31.68
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.16
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.37
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =   624.0 FT WITH ELEVATION-DROP =  25.0 FT, IS  319.4 CFS,
         WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  20319.00
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20319.00 = 10581.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020319.0 TO NODE LR020330.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1835.00  DOWNSTREAM ELEVATION(FEET) = 1813.00
  STREET LENGTH(FEET) =   597.75   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.79

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     220.06
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.86
    HALFSTREET FLOOD WIDTH(FEET) =   35.77
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.68
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.48
  STREET FLOW TRAVEL TIME(MIN.) =   1.15   Tc(MIN.) =  42.12
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.199
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.71      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.91      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.84
  SUBAREA AREA(ACRES) =    3.62      SUBAREA RUNOFF(CFS) =    1.86
  EFFECTIVE AREA(ACRES) =    361.52    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.77
  TOTAL AREA(ACRES) =    361.52        PEAK FLOW RATE(CFS) =     219.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
```

```
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.86   HALFSTREET FLOOD WIDTH(FEET) =  35.70
  FLOW VELOCITY(FEET/SEC.) =  8.67   DEPTH*VELOCITY(FT*FT/SEC.) =   7.46

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.79
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.77
  PIPE-FLOW(CFS) =     72.54
  PIPEFLOW TRAVEL TIME(MIN.) =   0.67    Tc(MIN.) =  41.65
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.208
  SUBAREA AREA(ACRES) =    3.62      SUBAREA RUNOFF(CFS) =    1.88
  TOTAL AREA(ACRES) =    361.52        PEAK FLOW RATE(CFS) =    219.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  146.59
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.77
    HALFSTREET FLOOD WIDTH(FEET) =   31.07
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.68
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.90
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20330.00 = 11179.07 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020330.0 TO NODE LR020330.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  41.65
  RAINFALL INTENSITY(INCH/HR) =   1.21
  AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.70
  AREA-AVERAGED Ap =  0.77
  EFFECTIVE STREAM AREA(ACRES) =   361.52
  TOTAL STREAM AREA(ACRES) =   361.52
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    219.14

****************************************************************************
  FLOW PROCESS FROM NODE LR020320.0 TO NODE LR020321.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1020.45
  ELEVATION DATA: UPSTREAM(FEET) =   2240.00  DOWNSTREAM(FEET) =   2180.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
```



```
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   19.882
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.882
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                 B        9.71      0.61      1.00    66   19.88
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA RUNOFF(CFS) =     11.08
  TOTAL AREA(ACRES) =      9.71   PEAK FLOW RATE(CFS) =     11.08

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020321.0 TO NODE LR020322.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2180.00  DOWNSTREAM(FEET) =   2160.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   548.49   CHANNEL SLOPE =  0.0365
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     11.08
  FLOW VELOCITY(FEET/SEC.) =   1.93   FLOW DEPTH(FEET) =   0.34
  TRAVEL TIME(MIN.) =   4.73   Tc(MIN.) =  24.61
  LONGEST FLOWPATH FROM NODE  20320.00 TO NODE  20322.00 =  1568.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020322.0 TO NODE LR020322.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  24.61
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.656
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                 B       15.34      0.61      1.00    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"           B        0.02      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =   15.36      SUBAREA RUNOFF(CFS) =   14.40
  EFFECTIVE AREA(ACRES) =     25.07   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     25.07       PEAK FLOW RATE(CFS) =      23.51

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020322.0 TO NODE LR020323.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```

```
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2160.00  DOWNSTREAM(FEET) =   2150.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   479.58   CHANNEL SLOPE =  0.0209
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     23.51
  FLOW VELOCITY(FEET/SEC.) =   1.89   FLOW DEPTH(FEET) =   0.50
  TRAVEL TIME(MIN.) =   4.23   Tc(MIN.) =  28.84
  LONGEST FLOWPATH FROM NODE  20320.00 TO NODE  20323.00 =  2048.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020323.0 TO NODE LR020323.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  28.84
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.505
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       11.74      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        8.32      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.68
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.82
  SUBAREA AREA(ACRES) =   20.06      SUBAREA RUNOFF(CFS) =   17.05
  EFFECTIVE AREA(ACRES) =     45.13   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.64  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     45.13       PEAK FLOW RATE(CFS) =      37.17

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020323.0 TO NODE LR020324.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2150.00  DOWNSTREAM(FEET) =   2100.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   676.85   CHANNEL SLOPE =  0.0739
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     37.17
  FLOW VELOCITY(FEET/SEC.) =   3.39   FLOW DEPTH(FEET) =   0.47
  TRAVEL TIME(MIN.) =   3.33   Tc(MIN.) =  32.17
  LONGEST FLOWPATH FROM NODE  20320.00 TO NODE  20324.00 =  2725.37 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020324.0 TO NODE LR020324.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  32.17
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.410
  SUBAREA LOSS RATE DATA(AMC  II):
```



```
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       14.74      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   14.74      SUBAREA RUNOFF(CFS) =   11.76
  EFFECTIVE AREA(ACRES) =     59.87   AREA-AVERAGED Fm(INCH/HR) =  0.57
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =     59.87       PEAK FLOW RATE(CFS) =      45.05

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020324.0 TO NODE LR020325.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2100.00  DOWNSTREAM(FEET) =   2080.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   631.62   CHANNEL SLOPE =  0.0317
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     45.05
  FLOW VELOCITY(FEET/SEC.) =   2.59   FLOW DEPTH(FEET) =   0.59
  TRAVEL TIME(MIN.) =   4.07   Tc(MIN.) =  36.24
  LONGEST FLOWPATH FROM NODE  20320.00 TO NODE  20325.00 =  3356.99 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020325.0 TO NODE LR020325.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  36.24
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.313
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       10.91      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   10.91      SUBAREA RUNOFF(CFS) =    7.75
  EFFECTIVE AREA(ACRES) =     70.78   AREA-AVERAGED Fm(INCH/HR) =  0.57
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     70.78       PEAK FLOW RATE(CFS) =      47.55

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020325.0 TO NODE LR020326.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2080.00  DOWNSTREAM(FEET) =   2050.00
```

```
  CHANNEL LENGTH THRU SUBAREA(FEET) =   686.64   CHANNEL SLOPE =  0.0437
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     47.55
  FLOW VELOCITY(FEET/SEC.) =   2.95   FLOW DEPTH(FEET) =   0.57
  TRAVEL TIME(MIN.) =   3.87   Tc(MIN.) =  40.11
  LONGEST FLOWPATH FROM NODE  20320.00 TO NODE  20326.00 =  4043.63 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020326.0 TO NODE LR020326.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  40.11
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.235
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       48.19      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.06      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   48.25      SUBAREA RUNOFF(CFS) =   30.90
  EFFECTIVE AREA(ACRES) =    119.03   AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.78
  TOTAL AREA(ACRES) =    119.03       PEAK FLOW RATE(CFS) =      73.51

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020326.0 TO NODE LR020327.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2050.00  DOWNSTREAM(FEET) =   1990.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1389.79   CHANNEL SLOPE =  0.0432
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     73.51
  FLOW VELOCITY(FEET/SEC.) =   3.31   FLOW DEPTH(FEET) =   0.67
  TRAVEL TIME(MIN.) =   7.00   Tc(MIN.) =  47.11
  LONGEST FLOWPATH FROM NODE  20320.00 TO NODE  20327.00 =  5433.42 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020327.0 TO NODE LR020327.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  47.11
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.121
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
```



```
  "2 DWELLINGS/ACRE"         B       16.19      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   16.19      SUBAREA RUNOFF(CFS) =    8.71
  EFFECTIVE AREA(ACRES) =    135.22   AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.77
  TOTAL AREA(ACRES) =    135.22       PEAK FLOW RATE(CFS) =      73.51
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020327.0 TO NODE LR020328.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1990.00  DOWNSTREAM(FEET) =   1920.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1079.99   CHANNEL SLOPE =  0.0648
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     73.51
  FLOW VELOCITY(FEET/SEC.) =   3.81   FLOW DEPTH(FEET) =   0.62
  TRAVEL TIME(MIN.) =   4.72   Tc(MIN.) =  51.83
  LONGEST FLOWPATH FROM NODE  20320.00 TO NODE  20328.00 =  6513.41 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020328.0 TO NODE LR020328.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  51.83
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.059
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       25.33      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.27      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   25.60      SUBAREA RUNOFF(CFS) =   12.35
  EFFECTIVE AREA(ACRES) =    160.82   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.76
  TOTAL AREA(ACRES) =    160.82       PEAK FLOW RATE(CFS) =      74.80

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020328.0 TO NODE LR020329.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1920.00  DOWNSTREAM ELEVATION(FEET) = 1870.00
```

```
  STREET LENGTH(FEET) =  1075.25   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.71

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      77.95
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.58
    HALFSTREET FLOOD WIDTH(FEET) =   22.23
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.35
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.29
  STREET FLOW TRAVEL TIME(MIN.) =   2.44   Tc(MIN.) =  54.27
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.030
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       13.84      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   13.84      SUBAREA RUNOFF(CFS) =    6.31
  EFFECTIVE AREA(ACRES) =    174.66    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.76
  TOTAL AREA(ACRES) =    174.66        PEAK FLOW RATE(CFS) =      76.94

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.58   HALFSTREET FLOOD WIDTH(FEET) =  22.10
  FLOW VELOCITY(FEET/SEC.) =  7.33   DEPTH*VELOCITY(FT*FT/SEC.) =   4.26
  LONGEST FLOWPATH FROM NODE  20320.00 TO NODE  20329.00 =  7588.66 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020329.0 TO NODE LR020330.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1870.00  DOWNSTREAM ELEVATION(FEET) = 1813.00
  STREET LENGTH(FEET) =   927.52   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
```



```
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.66

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      80.41
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.57
    HALFSTREET FLOOD WIDTH(FEET) =   21.31
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.19
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.64
  STREET FLOW TRAVEL TIME(MIN.) =   1.89   Tc(MIN.) =  56.16
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.009
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.48      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        5.88      0.75      0.90    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       11.27      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.76
  SUBAREA AREA(ACRES) =   17.63      SUBAREA RUNOFF(CFS) =    6.95
  EFFECTIVE AREA(ACRES) =    192.29    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.76
  TOTAL AREA(ACRES) =    192.29        PEAK FLOW RATE(CFS) =      80.60

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.57   HALFSTREET FLOOD WIDTH(FEET) =  21.37
  FLOW VELOCITY(FEET/SEC.) =  8.17   DEPTH*VELOCITY(FT*FT/SEC.) =   4.64
  LONGEST FLOWPATH FROM NODE  20320.00 TO NODE  20330.00 =  8516.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020330.0 TO NODE LR020330.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  56.16
  RAINFALL INTENSITY(INCH/HR) =   1.01
  AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.72
  AREA-AVERAGED Ap =  0.76
  EFFECTIVE STREAM AREA(ACRES) =   192.29
  TOTAL STREAM AREA(ACRES) =   192.29
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     80.60

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    219.14  41.65    1.208  0.70( 0.54) 0.77   361.5 LR020300.0
```

```
    2     80.60  56.16    1.009  0.72( 0.54) 0.76   192.3 LR020320.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    299.73  41.65    1.208  0.71( 0.54) 0.77   504.1 LR020300.0
      2    234.62  56.16    1.009  0.71( 0.54) 0.77   553.8 LR020320.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    299.73    Tc(MIN.) =    41.65
  EFFECTIVE AREA(ACRES) =   504.11   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.77
  TOTAL AREA(ACRES) =    553.81
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20330.00 = 11179.07 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020330.0 TO NODE LR020349.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1813.00  DOWNSTREAM ELEVATION(FEET) = 1785.00
  STREET LENGTH(FEET) =  1334.61   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.91

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     303.69
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.04
    HALFSTREET FLOOD WIDTH(FEET) =   44.49
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.71
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    8.00
  STREET FLOW TRAVEL TIME(MIN.) =   2.88   Tc(MIN.) =  44.53
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.160
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.05      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       12.65      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =   13.70      SUBAREA RUNOFF(CFS) =    7.92
  EFFECTIVE AREA(ACRES) =    517.81    AREA-AVERAGED Fm(INCH/HR) =  0.54
```



```
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.76
  TOTAL AREA(ACRES) =    567.51        PEAK FLOW RATE(CFS) =     299.73
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.03   HALFSTREET FLOOD WIDTH(FEET) =  44.31
  FLOW VELOCITY(FEET/SEC.) =  7.68   DEPTH*VELOCITY(FT*FT/SEC.) =   7.93

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.91
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.28
  PIPE-FLOW(CFS) =    110.27
  PIPEFLOW TRAVEL TIME(MIN.) =   1.67    Tc(MIN.) =  43.32
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.179
  SUBAREA AREA(ACRES) =   13.70      SUBAREA RUNOFF(CFS) =    8.16
  TOTAL AREA(ACRES) =    567.51        PEAK FLOW RATE(CFS) =    299.73
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  189.47
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.90
    HALFSTREET FLOOD WIDTH(FEET) =   37.47
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.80
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.09
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20349.00 = 12513.68 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020349.0 TO NODE LR020349.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  43.32
  RAINFALL INTENSITY(INCH/HR) =   1.18
  AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.71
  AREA-AVERAGED Ap =  0.76
  EFFECTIVE STREAM AREA(ACRES) =   517.81
  TOTAL STREAM AREA(ACRES) =   567.51
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    299.73

****************************************************************************
  FLOW PROCESS FROM NODE LR020340.0 TO NODE LR020341.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
```

```
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   998.88
  ELEVATION DATA: UPSTREAM(FEET) =   2120.00  DOWNSTREAM(FEET) =   2080.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.422
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.495
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.76      0.75      0.70    56   13.21
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.12      0.75      0.60    56   12.42
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA RUNOFF(CFS) =     14.06
  TOTAL AREA(ACRES) =      7.88   PEAK FLOW RATE(CFS) =     14.06

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

**************************************************************************
  FLOW PROCESS FROM NODE LR020341.0 TO NODE LR020342.0 IS CODE =  54
--------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2080.00  DOWNSTREAM(FEET) =   2055.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   397.26   CHANNEL SLOPE =  0.0629
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     14.06
  FLOW VELOCITY(FEET/SEC.) =   2.54   FLOW DEPTH(FEET) =   0.33
  TRAVEL TIME(MIN.) =   2.61   Tc(MIN.) =  15.03
  LONGEST FLOWPATH FROM NODE  20340.00 TO NODE  20342.00 =  1396.14 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE LR020342.0 TO NODE LR020342.0 IS CODE =  81
--------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN) =  15.03
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.226
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.25      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.25      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    4.50      SUBAREA RUNOFF(CFS) =    6.91
  EFFECTIVE AREA(ACRES) =     12.38   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     12.38       PEAK FLOW RATE(CFS) =      19.06
```



```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

**************************************************************************
  FLOW PROCESS FROM NODE LR020342.0 TO NODE LR020343.0 IS CODE =  54
--------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2055.00  DOWNSTREAM(FEET) =   2035.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   438.38   CHANNEL SLOPE =  0.0456
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     19.06
  FLOW VELOCITY(FEET/SEC.) =   2.39   FLOW DEPTH(FEET) =   0.40
  TRAVEL TIME(MIN.) =   3.06   Tc(MIN.) =  18.09
  LONGEST FLOWPATH FROM NODE  20340.00 TO NODE  20343.00 =  1834.52 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE LR020343.0 TO NODE LR020343.0 IS CODE =  81
--------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN) =  18.09
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.992
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.37      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.37      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    5.74      SUBAREA RUNOFF(CFS) =    7.61
  EFFECTIVE AREA(ACRES) =     18.12   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     18.12       PEAK FLOW RATE(CFS) =      24.06

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

**************************************************************************
  FLOW PROCESS FROM NODE LR020343.0 TO NODE LR020344.0 IS CODE =  54
--------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2035.00  DOWNSTREAM(FEET) =   2015.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   496.72   CHANNEL SLOPE =  0.0403
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     24.06
  FLOW VELOCITY(FEET/SEC.) =   2.43   FLOW DEPTH(FEET) =   0.45
  TRAVEL TIME(MIN.) =   3.41   Tc(MIN.) =  21.50
  LONGEST FLOWPATH FROM NODE  20340.00 TO NODE  20344.00 =  2331.24 FEET.

**************************************************************************
```

```
  FLOW PROCESS FROM NODE LR020344.0 TO NODE LR020344.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.50
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.795
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.06      0.75      0.70    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.77      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.07      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.81
  SUBAREA AREA(ACRES) =    4.90      SUBAREA RUNOFF(CFS) =    5.24
  EFFECTIVE AREA(ACRES) =     23.02   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.72
  TOTAL AREA(ACRES) =     23.02       PEAK FLOW RATE(CFS) =      26.10

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020344.0 TO NODE LR020345.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2015.00  DOWNSTREAM(FEET) =   1980.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   575.06   CHANNEL SLOPE =  0.0609
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     26.10
  FLOW VELOCITY(FEET/SEC.) =   2.90   FLOW DEPTH(FEET) =   0.42
  TRAVEL TIME(MIN.) =   3.31   Tc(MIN.) =  24.81
  LONGEST FLOWPATH FROM NODE  20340.00 TO NODE  20345.00 =  2906.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020345.0 TO NODE LR020345.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  24.81
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.648
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       12.00      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.27      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        3.29      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.74
```



```
  SUBAREA AREA(ACRES) =   15.56      SUBAREA RUNOFF(CFS) =   15.32
  EFFECTIVE AREA(ACRES) =     38.58   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =     38.58       PEAK FLOW RATE(CFS) =      38.35

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020345.0 TO NODE LR020346.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1980.00  DOWNSTREAM(FEET) =   1940.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   558.59   CHANNEL SLOPE =  0.0716
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     38.35
  FLOW VELOCITY(FEET/SEC.) =   3.39   FLOW DEPTH(FEET) =   0.48
  TRAVEL TIME(MIN.) =   2.75   Tc(MIN.) =  27.56
  LONGEST FLOWPATH FROM NODE  20340.00 TO NODE  20346.00 =  3464.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020346.0 TO NODE LR020346.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  27.56
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.547
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        3.53      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.62      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        3.41      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.78
  SUBAREA AREA(ACRES) =    7.56      SUBAREA RUNOFF(CFS) =    6.55
  EFFECTIVE AREA(ACRES) =     46.14   AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.74
  TOTAL AREA(ACRES) =     46.14       PEAK FLOW RATE(CFS) =      41.41

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020346.0 TO NODE LR020347.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1940.00  DOWNSTREAM ELEVATION(FEET) = 1890.00
  STREET LENGTH(FEET) =   993.62   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00
```

```
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      45.78
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.50
    HALFSTREET FLOOD WIDTH(FEET) =   18.14
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.26
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.15
  STREET FLOW TRAVEL TIME(MIN.) =   2.64   Tc(MIN.) =  30.20
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.464
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.71      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.04      0.75      0.70    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.62      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.71
  SUBAREA AREA(ACRES) =   10.37      SUBAREA RUNOFF(CFS) =    8.74
  EFFECTIVE AREA(ACRES) =     56.51    AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =     56.51        PEAK FLOW RATE(CFS) =      46.71

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.51   HALFSTREET FLOOD WIDTH(FEET) =  18.26
  FLOW VELOCITY(FEET/SEC.) =  6.31   DEPTH*VELOCITY(FT*FT/SEC.) =   3.19
  LONGEST FLOWPATH FROM NODE  20340.00 TO NODE  20347.00 =  4458.51 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020347.0 TO NODE LR020348.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1890.00  DOWNSTREAM ELEVATION(FEET) = 1860.00
  STREET LENGTH(FEET) =   874.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
```



```
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.78

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      52.02
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.55
    HALFSTREET FLOOD WIDTH(FEET) =   20.27
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.81
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.17
  STREET FLOW TRAVEL TIME(MIN.) =   2.51   Tc(MIN.) =  32.71
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.396
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.78      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       12.66      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =   13.44      SUBAREA RUNOFF(CFS) =   10.60
  EFFECTIVE AREA(ACRES) =     69.95    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.72
  TOTAL AREA(ACRES) =     69.95        PEAK FLOW RATE(CFS) =      53.84

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.55   HALFSTREET FLOOD WIDTH(FEET) =  20.52
  FLOW VELOCITY(FEET/SEC.) =  5.88   DEPTH*VELOCITY(FT*FT/SEC.) =   3.24
  LONGEST FLOWPATH FROM NODE  20340.00 TO NODE  20348.00 =  5333.01 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020348.0 TO NODE LR020349.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1860.00  DOWNSTREAM ELEVATION(FEET) = 1785.00
  STREET LENGTH(FEET) =  1082.38   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.64

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      66.23
```

```
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.53
  HALFSTREET FLOOD WIDTH(FEET) =   19.48
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.96
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.22
 STREET FLOW TRAVEL TIME(MIN.) =   2.27   Tc(MIN.) =  34.98
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.341
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B       33.09      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.55      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
 SUBAREA AREA(ACRES) =   33.64      SUBAREA RUNOFF(CFS) =   24.78
 EFFECTIVE AREA(ACRES) =    103.59    AREA-AVERAGED Fm(INCH/HR) =  0.53
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.71
 TOTAL AREA(ACRES) =    103.59        PEAK FLOW RATE(CFS) =      75.15

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.55   HALFSTREET FLOOD WIDTH(FEET) =  20.39
 FLOW VELOCITY(FEET/SEC.) =  8.30   DEPTH*VELOCITY(FT*FT/SEC.) =   4.55
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L = 1082.4 FT WITH ELEVATION-DROP =  75.0 FT, IS   63.3 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20349.00
 LONGEST FLOWPATH FROM NODE  20340.00 TO NODE  20349.00 =  6415.39 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020349.0 TO NODE LR020349.0 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  34.98
 RAINFALL INTENSITY(INCH/HR) =   1.34
 AREA-AVERAGED Fm(INCH/HR) =  0.53
 AREA-AVERAGED Fp(INCH/HR) =  0.75
 AREA-AVERAGED Ap =  0.71
 EFFECTIVE STREAM AREA(ACRES) =   103.59
 TOTAL STREAM AREA(ACRES) =   103.59
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     75.15

 ** CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    299.73  43.32    1.179  0.71( 0.54) 0.76   517.8 LR020300.0
     1    234.62  57.93    0.991  0.71( 0.54) 0.76   567.5 LR020320.0
     2     75.15  34.98    1.341  0.75( 0.53) 0.71   103.6 LR020340.0

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
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 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    374.89  34.98    1.341  0.71( 0.54) 0.75   521.7 LR020340.0
     2    359.83  43.32    1.179  0.71( 0.54) 0.76   621.4 LR020300.0
     3    277.13  57.93    0.991  0.71( 0.54) 0.76   671.1 LR020320.0

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    374.89    Tc(MIN.) =    34.98
 EFFECTIVE AREA(ACRES) =   521.69   AREA-AVERAGED Fm(INCH/HR) =  0.54
 AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.75
 TOTAL AREA(ACRES) =    671.10
 LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20349.00 = 12513.68 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020349.0 TO NODE LR020349.0 IS CODE =  71
----------------------------------------------------------------------------
 >>>>>PEAK FLOW RATE ESTIMATOR CHANGED TO UNIT-HYDROGRAPH METHOD<<<<<
 >>>>>USING TIME-OF-CONCENTRATION OF LONGEST FLOWPATH<<<<<
============================================================================
 UNIT-HYDROGRAPH DATA:
 RAINFALL(INCH): 5M= 0.36;30M= 0.74;1H= 0.97;3H= 1.70;6H= 2.43;24H= 5.53
 S-GRAPH: VALLEY(DEV.)= 76.1%;VALLEY(UNDEV.)/DESERT= 23.9%
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
 Tc(HR) = 0.72; LAG(HR) = 0.58; Fm(INCH/HR) = 0.54; Ybar = 0.56
 USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
 DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
 3HR = 1.00; 6HR = 1.00; 24HR= 1.00
 UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    671.10
 LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20349.00 = 12513.68 FEET.
  EQUIVALENT BASIN FACTOR APPROXIMATIONS:
  Lca/L=0.3,n=.0599; Lca/L=0.4,n=.0537; Lca/L=0.5,n=.0493;Lca/L=0.6,n=.0460
 TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     145.63
 UNIT-HYDROGRAPH METHOD PEAK FLOW RATE(CFS) =    484.89
 TOTAL PEAK FLOW RATE(CFS) =    484.89 (SOURCE FLOW INCLUDED)
 RATIONAL METHOD PEAK FLOW RATE(CFS) =    374.89
  (UPSTREAM NODE PEAK FLOW RATE(CFS) =    374.89)
 PEAK FLOW RATE(CFS) USED =    484.89

****************************************************************************
 FLOW PROCESS FROM NODE LR020349.0 TO NODE LR020350.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1785.00  DOWNSTREAM ELEVATION(FEET) = 1715.00
 STREET LENGTH(FEET) =  1290.16   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
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Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.68

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     501.85
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  1.03
  HALFSTREET FLOOD WIDTH(FEET) =   44.50
  AVERAGE FLOW VELOCITY(FEET/SEC.) =   12.44
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   12.81
STREET FLOW TRAVEL TIME(MIN.) =   1.73   Tc(MIN.) =  45.05
*  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.152
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        4.52      0.75      0.60    56
RESIDENTIAL
".4 DWELLING/ACRE"         B       72.05      0.75      0.90    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.88
UNIT-HYDROGRAPH DATA:
RAINFALL(INCH): 5M= 0.36;30M= 0.74;1H= 0.97;3H= 1.70;6H= 2.43;24H= 5.53
S-GRAPH: VALLEY(DEV.)= 68.9%;VALLEY(UNDEV.)/DESERT= 31.1%
        MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
Tc(HR) = 0.75; LAG(HR) = 0.60; Fm(INCH/HR) = 0.55; Ybar = 0.57
USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
3HR = 0.99; 6HR = 1.00; 24HR= 1.00
UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    747.67
LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20350.00 = 12513.68 FEET.
 EQUIVALENT BASIN FACTOR APPROXIMATIONS:
 Lca/L=0.3,n=.0632; Lca/L=0.4,n=.0567; Lca/L=0.5,n=.0521;Lca/L=0.6,n=.0486
TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =     158.22
UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    515.90
TOTAL AREA(ACRES) =    747.67        PEAK FLOW RATE(CFS) =     515.90

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.04   HALFSTREET FLOOD WIDTH(FEET) =  44.99
FLOW VELOCITY(FEET/SEC.) = 12.52   DEPTH*VELOCITY(FT*FT/SEC.) =  13.02

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.68
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  26.53
PIPE-FLOW(CFS) =    422.37
PIPEFLOW TRAVEL TIME(MIN.) =   0.81    Tc(MIN.) =  44.13
UNIT-HYDROGRAPH DATA:
RAINFALL(INCH): 5M= 0.36;30M= 0.74;1H= 0.97;3H= 1.70;6H= 2.43;24H= 5.53
S-GRAPH: VALLEY(DEV.)= 68.9%;VALLEY(UNDEV.)/DESERT= 31.1%
        MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
Tc(HR) = 0.72; LAG(HR) = 0.58; Fm(INCH/HR) = 0.55; Ybar = 0.57
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  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    747.67
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20350.00 = 13803.84 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0554; Lca/L=0.4,n=.0497; Lca/L=0.5,n=.0456;Lca/L=0.6,n=.0426
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     158.22
  TOTAL AREA(ACRES) =    747.67        PEAK FLOW RATE(CFS) =    517.17

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   94.80
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.60
    HALFSTREET FLOOD WIDTH(FEET) =   23.20
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.24
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.98

****************************************************************************
  FLOW PROCESS FROM NODE LR020350.0 TO NODE LR020351.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1715.00  DOWNSTREAM ELEVATION(FEET) = 1680.00
  STREET LENGTH(FEET) =  1342.03   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     534.30
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.19
    HALFSTREET FLOOD WIDTH(FEET) =   52.74
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.48
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   11.33
  STREET FLOW TRAVEL TIME(MIN.) =   2.36   Tc(MIN.) =  46.49
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.130
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        7.14      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       72.56      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
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SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.87
UNIT-HYDROGRAPH DATA:
RAINFALL(INCH): 5M= 0.36;30M= 0.74;1H= 0.97;3H= 1.70;6H= 2.43;24H= 5.53
S-GRAPH: VALLEY(DEV.)= 63.2%;VALLEY(UNDEV.)/DESERT= 36.8%
         MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
Tc(HR) = 0.77; LAG(HR) = 0.62; Fm(INCH/HR) = 0.56; Ybar = 0.58
USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
3HR = 0.99; 6HR = 1.00; 24HR= 1.00
UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    827.37
LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20351.00 = 13803.84 FEET.
 EQUIVALENT BASIN FACTOR APPROXIMATIONS:
 Lca/L=0.3,n=.0599; Lca/L=0.4,n=.0537; Lca/L=0.5,n=.0493;Lca/L=0.6,n=.0460
TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =     171.54
UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    550.98
TOTAL AREA(ACRES) =    827.37        PEAK FLOW RATE(CFS) =     550.98

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.21   HALFSTREET FLOOD WIDTH(FEET) =  53.41
FLOW VELOCITY(FEET/SEC.) =  9.53   DEPTH*VELOCITY(FT*FT/SEC.) =  11.52

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.84
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  63.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  20.39
PIPE-FLOW(CFS) =    441.74
PIPEFLOW TRAVEL TIME(MIN.) =   1.10    Tc(MIN.) =  45.23
UNIT-HYDROGRAPH DATA:
RAINFALL(INCH): 5M= 0.36;30M= 0.74;1H= 0.97;3H= 1.70;6H= 2.43;24H= 5.53
S-GRAPH: VALLEY(DEV.)= 63.2%;VALLEY(UNDEV.)/DESERT= 36.8%
         MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
Tc(HR) = 0.74; LAG(HR) = 0.59; Fm(INCH/HR) = 0.56; Ybar = 0.58
USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
3HR = 0.99; 6HR = 1.00; 24HR= 1.00
UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    827.37
LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20351.00 = 15145.87 FEET.
 EQUIVALENT BASIN FACTOR APPROXIMATIONS:
 Lca/L=0.3,n=.0521; Lca/L=0.4,n=.0467; Lca/L=0.5,n=.0429;Lca/L=0.6,n=.0400
TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     171.54
TOTAL AREA(ACRES) =    827.37        PEAK FLOW RATE(CFS) =    555.42

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  113.69
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.71
  HALFSTREET FLOOD WIDTH(FEET) =   28.63
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.64
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.73
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  FLOW PROCESS FROM NODE LR020351.0 TO NODE LR020352.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1680.00  DOWNSTREAM ELEVATION(FEET) = 1655.00
  STREET LENGTH(FEET) =  1091.03   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     558.81
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.24
    HALFSTREET FLOOD WIDTH(FEET) =   55.06
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.11
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   11.30
  STREET FLOW TRAVEL TIME(MIN.) =   2.00   Tc(MIN.) =  47.22
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.120
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       15.77      0.75       0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.71      0.75       0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.89
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.74;1H= 0.97;3H= 1.70;6H= 2.43;24H= 5.53
  S-GRAPH: VALLEY(DEV.)= 62.0%;VALLEY(UNDEV.)/DESERT= 38.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.79; LAG(HR) = 0.63; Fm(INCH/HR) = 0.56; Ybar = 0.58
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    843.85
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20352.00 = 15145.87 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0560; Lca/L=0.4,n=.0502; Lca/L=0.5,n=.0461;Lca/L=0.6,n=.0430
  TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =     174.21
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    555.27
  TOTAL AREA(ACRES) =    843.85        PEAK FLOW RATE(CFS) =     555.42
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53
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  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.24   HALFSTREET FLOOD WIDTH(FEET) =  54.94
  FLOW VELOCITY(FEET/SEC.) =  9.09   DEPTH*VELOCITY(FT*FT/SEC.) =  11.26

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.87
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  66.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.71
  PIPE-FLOW(CFS) =    468.76
  PIPEFLOW TRAVEL TIME(MIN.) =   0.92    Tc(MIN.) =  46.15
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.74;1H= 0.97;3H= 1.70;6H= 2.43;24H= 5.53
  S-GRAPH: VALLEY(DEV.)= 62.0%;VALLEY(UNDEV.)/DESERT= 38.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.75; LAG(HR) = 0.60; Fm(INCH/HR) = 0.56; Ybar = 0.58
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    843.85
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20352.00 = 16236.90 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0502; Lca/L=0.4,n=.0450; Lca/L=0.5,n=.0413;Lca/L=0.6,n=.0386
  TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =     174.21
  TOTAL AREA(ACRES) =    843.85        PEAK FLOW RATE(CFS) =    560.35

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   91.59
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.68
    HALFSTREET FLOOD WIDTH(FEET) =   26.99
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.99
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.07

****************************************************************************
  FLOW PROCESS FROM NODE LR020352.0 TO NODE LR020352.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020274.0 TO NODE LR020274.0 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20274.dna
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1865.50    Tc(MIN.) =  44.02
  AREA-AVERAGED Fm(INCH/HR) =  0.59    Ybar = 0.59
  TOTAL AREA(ACRES) =    3101.93
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20274.00 = 19473.89 FEET.
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****************************************************************************
  FLOW PROCESS FROM NODE LR020274.0 TO NODE LR020274.0 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1865.50    Tc(MIN.) =  44.02
  AREA-AVERAGED Fm(INCH/HR) =  0.59    Ybar = 0.59
  TOTAL AREA(ACRES) =    3101.93
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20274.00 = 19473.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020274.0 TO NODE LR020274.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020274.0 TO NODE LR020352.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1670.00  DOWNSTREAM(FEET) =   1655.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   623.43   CHANNEL SLOPE =  0.0241
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   1865.50
  FLOW VELOCITY(FEET/SEC.) =  28.09   FLOW DEPTH(FEET) =   3.78
  TRAVEL TIME(MIN.) =   0.37   Tc(MIN.) =  44.39
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20352.00 = 20097.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020352.0 TO NODE LR020352.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  44.39
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.162
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  SCHOOL                     B       10.49      0.75       0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.59      0.75       0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       21.45      0.75       0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.79
  SUBAREA AREA(ACRES) =   33.53
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.38;30M= 0.77;1H= 1.01;3H= 1.82;6H= 2.65;24H= 5.85
  S-GRAPH: VALLEY(DEV.)= 35.0%;VALLEY(UNDEV.)/DESERT= 65.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.74; LAG(HR) = 0.59; Fm(INCH/HR) = 0.59; Ybar = 0.59
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.86; 30M = 0.86; 1HR = 0.86;
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  3HR = 0.98; 6HR = 0.99; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   3135.46
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20352.00 = 20097.32 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0439; Lca/L=0.4,n=.0393; Lca/L=0.5,n=.0361;Lca/L=0.6,n=.0337
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     656.90
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1870.53
  TOTAL AREA(ACRES) =   3135.46       PEAK FLOW RATE(CFS) =    1870.53

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020352.0 TO NODE LR020352.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     1870.53    Tc(MIN.) =  44.39
  AREA-AVERAGED Fm(INCH/HR) =  0.59    Ybar = 0.59
  TOTAL AREA(ACRES) =    3135.46
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20352.00 = 20097.32 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =      560.35    Tc(MIN.) =  46.15
  AREA-AVERAGED Fm(INCH/HR) =  0.56    Ybar = 0.58
  TOTAL AREA(ACRES) =     843.85
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20352.00 = 16236.90 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.37;30M= 0.76;1H= 1.00;3H= 1.80;6H= 2.60;24H= 5.79
  S-GRAPH: VALLEY(DEV.)= 40.8%;VALLEY(UNDEV.)/DESERT= 59.2%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.74; LAG(HR) = 0.59; Fm(INCH/HR) = 0.59; Ybar = 0.59
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.82; 30M = 0.82; 1HR = 0.82;
  3HR = 0.97; 6HR = 0.99; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   3979.31
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20352.00 = 20097.32 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0439; Lca/L=0.4,n=.0393; Lca/L=0.5,n=.0361;Lca/L=0.6,n=.0337
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     822.47
  PEAK FLOW RATE(CFS) =    2253.36

****************************************************************************
  FLOW PROCESS FROM NODE LR020352.0 TO NODE LR020352.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020352.0 TO NODE LR020353.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
```



```
  ELEVATION DATA: UPSTREAM(FEET) =   1655.00  DOWNSTREAM(FEET) =   1625.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1454.79   CHANNEL SLOPE =  0.0206
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   6.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   2253.36
  FLOW VELOCITY(FEET/SEC.) =  27.62   FLOW DEPTH(FEET) =   4.06
  TRAVEL TIME(MIN.) =   0.88   Tc(MIN.) =  45.27
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20353.00 = 21552.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020353.0 TO NODE LR020353.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  45.27
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.149
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  SCHOOL                     B       20.64      0.75       0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.09      0.75       0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       25.75      0.75       0.90    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.69      0.61       1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.78
  SUBAREA AREA(ACRES) =   50.17
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.37;30M= 0.76;1H= 1.00;3H= 1.80;6H= 2.60;24H= 5.78
  S-GRAPH: VALLEY(DEV.)= 40.8%;VALLEY(UNDEV.)/DESERT= 59.2%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.75; LAG(HR) = 0.60; Fm(INCH/HR) = 0.59; Ybar = 0.59
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.82; 30M = 0.82; 1HR = 0.82;
  3HR = 0.97; 6HR = 0.99; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   4029.48
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20353.00 = 21552.11 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0420; Lca/L=0.4,n=.0377; Lca/L=0.5,n=.0346;Lca/L=0.6,n=.0323
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     832.02
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   2245.01
  TOTAL AREA(ACRES) =   4029.48       PEAK FLOW RATE(CFS) =    2253.36
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020353.0 TO NODE LR020376.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1625.00  DOWNSTREAM(FEET) =   1600.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1369.05   CHANNEL SLOPE =  0.0183
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   2.000
```

```
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   6.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   2253.36
  FLOW VELOCITY(FEET/SEC.) =  26.44   FLOW DEPTH(FEET) =   4.18
  TRAVEL TIME(MIN.) =   0.86   Tc(MIN.) =  46.13
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20376.00 = 22921.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020376.0 TO NODE LR020376.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  46.13
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.136
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B       13.67      0.75      0.25    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       19.97      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        5.87      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.52
  SUBAREA AREA(ACRES) =   39.51
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.37;30M= 0.76;1H= 1.00;3H= 1.80;6H= 2.60;24H= 5.78
  S-GRAPH: VALLEY(DEV.)= 41.2%;VALLEY(UNDEV.)/DESERT= 58.8%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.77; LAG(HR) = 0.62; Fm(INCH/HR) = 0.58; Ybar = 0.59
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.82; 30M = 0.82; 1HR = 0.82;
  3HR = 0.97; 6HR = 0.99; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   4068.99
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20376.00 = 22921.16 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0405; Lca/L=0.4,n=.0363; Lca/L=0.5,n=.0334;Lca/L=0.6,n=.0311
  TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =     842.62
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   2239.28
  TOTAL AREA(ACRES) =   4068.99       PEAK FLOW RATE(CFS) =    2253.36
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020376.0 TO NODE LR020376.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =    2253.36    Tc(MIN.) =  46.13
  AREA-AVERAGED Fm(INCH/HR) =  0.58   Ybar = 0.59
  TOTAL AREA(ACRES) =    4068.99

****************************************************************************
  FLOW PROCESS FROM NODE LR020360.0 TO NODE LR020361.0 IS CODE =  21
----------------------------------------------------------------------------
```



```
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   985.35
  ELEVATION DATA: UPSTREAM(FEET) =   2220.00  DOWNSTREAM(FEET) =   2160.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.078
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.538
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.63      0.75      0.70    56   12.08
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA RUNOFF(CFS) =     12.02
  TOTAL AREA(ACRES) =      6.63   PEAK FLOW RATE(CFS) =     12.02

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020361.0 TO NODE LR020362.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2160.00  DOWNSTREAM(FEET) =   2130.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   511.55   CHANNEL SLOPE =  0.0586
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     12.02
  FLOW VELOCITY(FEET/SEC.) =   2.38   FLOW DEPTH(FEET) =   0.32
  TRAVEL TIME(MIN.) =   3.58   Tc(MIN.) =  15.66
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20362.00 =  1496.90 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020362.0 TO NODE LR020362.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  15.66
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.172
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.52      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.40      0.75      0.60    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.20      0.61      1.00    66
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        3.04      0.75      0.40    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.70
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   12.16      SUBAREA RUNOFF(CFS) =   18.42
```

```
  EFFECTIVE AREA(ACRES) =     18.79   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     18.79       PEAK FLOW RATE(CFS) =      28.26

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020362.0 TO NODE LR020363.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2130.00  DOWNSTREAM(FEET) =   2110.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   490.89   CHANNEL SLOPE =  0.0407
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     28.26
  FLOW VELOCITY(FEET/SEC.) =   2.56   FLOW DEPTH(FEET) =   0.47
  TRAVEL TIME(MIN.) =   3.20   Tc(MIN.) =  18.86
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20363.00 =  1987.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020363.0 TO NODE LR020363.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  18.86
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.943
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.09      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.13      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    7.52      SUBAREA RUNOFF(CFS) =    9.72
  EFFECTIVE AREA(ACRES) =     26.31   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     26.31       PEAK FLOW RATE(CFS) =      34.10

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020363.0 TO NODE LR020364.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2110.00  DOWNSTREAM(FEET) =   2100.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   560.20   CHANNEL SLOPE =  0.0179
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
```



```
  CHANNEL FLOW THRU SUBAREA(CFS) =     34.10
  FLOW VELOCITY(FEET/SEC.) =   1.96   FLOW DEPTH(FEET) =   0.59
  TRAVEL TIME(MIN.) =   4.77   Tc(MIN.) =  23.63
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20364.00 =  2547.99 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020364.0 TO NODE LR020364.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  23.63
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.697
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       10.47      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.47      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =   11.94      SUBAREA RUNOFF(CFS) =   12.71
  EFFECTIVE AREA(ACRES) =     38.25   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     38.25       PEAK FLOW RATE(CFS) =      40.98

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020364.0 TO NODE LR020365.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2100.00  DOWNSTREAM(FEET) =   2090.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   586.56   CHANNEL SLOPE =  0.0170
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     40.98
  FLOW VELOCITY(FEET/SEC.) =   2.01   FLOW DEPTH(FEET) =   0.64
  TRAVEL TIME(MIN.) =   4.85   Tc(MIN.) =  28.48
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20365.00 =  3134.55 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020365.0 TO NODE LR020365.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  28.48
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.517
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.95      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       11.94      0.75      0.70    56
```

```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =   12.89      SUBAREA RUNOFF(CFS) =   11.59
  EFFECTIVE AREA(ACRES) =     51.14   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     51.14       PEAK FLOW RATE(CFS) =      46.37

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020365.0 TO NODE LR020366.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2090.00  DOWNSTREAM(FEET) =   2055.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   592.61   CHANNEL SLOPE =  0.0591
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     46.37
  FLOW VELOCITY(FEET/SEC.) =   3.31   FLOW DEPTH(FEET) =   0.53
  TRAVEL TIME(MIN.) =   2.98   Tc(MIN.) =  31.46
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20366.00 =  3727.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020366.0 TO NODE LR020366.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  31.46
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.429
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.40      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        7.97      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =    8.37      SUBAREA RUNOFF(CFS) =    6.85
  EFFECTIVE AREA(ACRES) =     59.51   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     59.51       PEAK FLOW RATE(CFS) =      49.17

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020366.0 TO NODE LR020367.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2055.00  DOWNSTREAM(FEET) =   2040.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   831.01   CHANNEL SLOPE =  0.0181
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
```



```
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     49.17
  FLOW VELOCITY(FEET/SEC.) =   2.15   FLOW DEPTH(FEET) =   0.68
  TRAVEL TIME(MIN.) =   6.44   Tc(MIN.) =  37.90
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20367.00 =  4558.17 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020367.0 TO NODE LR020367.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  37.90
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.278
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       40.07      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.44      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =   44.51      SUBAREA RUNOFF(CFS) =   30.51
  EFFECTIVE AREA(ACRES) =    104.02   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =    104.02       PEAK FLOW RATE(CFS) =      71.59

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020367.0 TO NODE LR020368.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2040.00  DOWNSTREAM(FEET) =   1970.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   949.68   CHANNEL SLOPE =  0.0737
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     71.59
  FLOW VELOCITY(FEET/SEC.) =   4.00   FLOW DEPTH(FEET) =   0.60
  TRAVEL TIME(MIN.) =   3.95   Tc(MIN.) =  41.86
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20368.00 =  5507.85 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020368.0 TO NODE LR020368.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  41.86
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.204
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       15.48      0.75      0.70    56
  RESIDENTIAL
```

```
  ".4 DWELLING/ACRE"         B        0.21      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   15.69      SUBAREA RUNOFF(CFS) =    9.58
  EFFECTIVE AREA(ACRES) =    119.71   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =    119.71       PEAK FLOW RATE(CFS) =      74.26

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020368.0 TO NODE LR020369.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1970.00  DOWNSTREAM(FEET) =   1900.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   892.15   CHANNEL SLOPE =  0.0785
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     74.26
  FLOW VELOCITY(FEET/SEC.) =   4.13   FLOW DEPTH(FEET) =   0.60
  TRAVEL TIME(MIN.) =   3.60   Tc(MIN.) =  45.46
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20369.00 =  6400.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020369.0 TO NODE LR020369.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  45.46
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.146
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B       29.59      0.75      0.70    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"          B        0.11      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   29.70      SUBAREA RUNOFF(CFS) =   16.62
  EFFECTIVE AREA(ACRES) =    149.41   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =    149.41       PEAK FLOW RATE(CFS) =      84.60

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020369.0 TO NODE LR020370.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1900.00  DOWNSTREAM(FEET) =   1860.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   949.40   CHANNEL SLOPE =  0.0421
```



```
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     84.60
  FLOW VELOCITY(FEET/SEC.) =   3.39   FLOW DEPTH(FEET) =   0.71
  TRAVEL TIME(MIN.) =   4.67   Tc(MIN.) =  50.13
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20370.00 =  7349.40 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020370.0 TO NODE LR020370.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  50.13
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.080
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"          B        9.75      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.37      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        7.31      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.81
  SUBAREA AREA(ACRES) =   17.43      SUBAREA RUNOFF(CFS) =    7.45
  EFFECTIVE AREA(ACRES) =    166.84   AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.71
  TOTAL AREA(ACRES) =    166.84       PEAK FLOW RATE(CFS) =      84.60
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

****************************************************************************
  FLOW PROCESS FROM NODE LR020370.0 TO NODE LR020371.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1860.00  DOWNSTREAM ELEVATION(FEET) = 1845.00
  STREET LENGTH(FEET) =   771.36   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      85.97
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.68
```

```
  HALFSTREET FLOOD WIDTH(FEET) =   27.17
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.55
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.79
STREET FLOW TRAVEL TIME(MIN.) =   2.32   Tc(MIN.) =  52.45
*  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.052
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        1.23      0.75      0.60    56
RESIDENTIAL
".4 DWELLING/ACRE"         B        0.24      0.75      0.90    56
RESIDENTIAL
"2 DWELLINGS/ACRE"         B        4.18      0.75      0.70    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
SUBAREA AREA(ACRES) =    5.65      SUBAREA RUNOFF(CFS) =    2.74
EFFECTIVE AREA(ACRES) =    172.49    AREA-AVERAGED Fm(INCH/HR) =  0.53
AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.71
TOTAL AREA(ACRES) =    172.49        PEAK FLOW RATE(CFS) =      84.60
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.68   HALFSTREET FLOOD WIDTH(FEET) =  26.99
FLOW VELOCITY(FEET/SEC.) =  5.53   DEPTH*VELOCITY(FT*FT/SEC.) =   3.76
LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20371.00 =  8120.76 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020371.0 TO NODE LR020372.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1845.00  DOWNSTREAM ELEVATION(FEET) = 1825.00
  STREET LENGTH(FEET) =   580.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.77

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      93.71
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.64
    HALFSTREET FLOOD WIDTH(FEET) =   25.16
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.00
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.50
  STREET FLOW TRAVEL TIME(MIN.) =   1.38   Tc(MIN.) =  53.83
```



```
*  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.035
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        3.05      0.75      0.60    56
RESIDENTIAL
"2 DWELLINGS/ACRE"         B       36.06      0.75      0.70    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
SUBAREA AREA(ACRES) =   39.11      SUBAREA RUNOFF(CFS) =   18.22
EFFECTIVE AREA(ACRES) =    211.60    AREA-AVERAGED Fm(INCH/HR) =  0.52
AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.70
TOTAL AREA(ACRES) =    211.60        PEAK FLOW RATE(CFS) =      97.35

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.65   HALFSTREET FLOOD WIDTH(FEET) =  25.52
FLOW VELOCITY(FEET/SEC.) =  7.08   DEPTH*VELOCITY(FT*FT/SEC.) =   4.60
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
       AND L =  580.5 FT WITH ELEVATION-DROP =  20.0 FT, IS   80.0 CFS,
       WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20372.00
LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20372.00 =  8701.26 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020372.0 TO NODE LR020373.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1825.00  DOWNSTREAM ELEVATION(FEET) = 1770.00
  STREET LENGTH(FEET) =  1298.78   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.77

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     112.31
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.70
    HALFSTREET FLOOD WIDTH(FEET) =   27.89
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.32
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.16
  STREET FLOW TRAVEL TIME(MIN.) =   2.96   Tc(MIN.) =  56.78
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.003
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        6.56      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       75.29      0.75      0.90    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        9.91      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.86
  SUBAREA AREA(ACRES) =   91.76      SUBAREA RUNOFF(CFS) =   29.86
  EFFECTIVE AREA(ACRES) =    303.36    AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.75
  TOTAL AREA(ACRES) =    303.36        PEAK FLOW RATE(CFS) =     120.99

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.72   HALFSTREET FLOOD WIDTH(FEET) =  28.56
  FLOW VELOCITY(FEET/SEC.) =  7.52   DEPTH*VELOCITY(FT*FT/SEC.) =   5.40
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1298.8 FT WITH ELEVATION-DROP =  55.0 FT, IS  141.9 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20373.00
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20373.00 = 10000.04 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020373.0 TO NODE LR020374.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1770.00  DOWNSTREAM ELEVATION(FEET) = 1720.00
  STREET LENGTH(FEET) =  1333.48   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.79

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     132.46
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.75
    HALFSTREET FLOOD WIDTH(FEET) =   29.97
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.47
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.57
  STREET FLOW TRAVEL TIME(MIN.) =   2.98   Tc(MIN.) =  59.76
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.972
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        6.64      0.75      0.60    56
```



```
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       73.46      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.88
  SUBAREA AREA(ACRES) =   80.10      SUBAREA RUNOFF(CFS) =   22.91
  EFFECTIVE AREA(ACRES) =    383.46    AREA-AVERAGED Fm(INCH/HR) =  0.58
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.78
  TOTAL AREA(ACRES) =    383.46        PEAK FLOW RATE(CFS) =     135.64

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.75   HALFSTREET FLOOD WIDTH(FEET) =  30.21
  FLOW VELOCITY(FEET/SEC.) =  7.52   DEPTH*VELOCITY(FT*FT/SEC.) =   5.65
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1333.5 FT WITH ELEVATION-DROP =  50.0 FT, IS  119.3 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20374.00
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20374.00 = 11333.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020374.0 TO NODE LR020375.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1720.00  DOWNSTREAM ELEVATION(FEET) = 1660.00
  STREET LENGTH(FEET) =  1282.17   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.75

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     146.23
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.74
    HALFSTREET FLOOD WIDTH(FEET) =   29.84
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.31
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.18
  STREET FLOW TRAVEL TIME(MIN.) =   2.57   Tc(MIN.) =  62.33
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.948
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        8.27      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       70.54      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.87
```

```
  SUBAREA AREA(ACRES) =   78.81      SUBAREA RUNOFF(CFS) =   21.17
  EFFECTIVE AREA(ACRES) =    462.27    AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =    462.27        PEAK FLOW RATE(CFS) =     148.43

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.75   HALFSTREET FLOOD WIDTH(FEET) =  29.97
  FLOW VELOCITY(FEET/SEC.) =  8.37   DEPTH*VELOCITY(FT*FT/SEC.) =   6.24
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1282.2 FT WITH ELEVATION-DROP =  60.0 FT, IS  123.8 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20375.00
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20375.00 = 12615.69 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020375.0 TO NODE LR020376.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1660.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1600.00
  FLOW LENGTH(FEET) =  1887.14   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  23.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  21.03
  PIPE-FLOW(CFS) =    148.43
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.59    Tc(MIN.) =  63.92
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.934
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       17.76      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       79.51      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.85
  SUBAREA AREA(ACRES) =   97.27      SUBAREA RUNOFF(CFS) =   26.41
  EFFECTIVE AREA(ACRES) =    559.54    AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =    559.54        PEAK FLOW RATE(CFS) =    168.93

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.70; 6HR = 2.43; 24HR = 5.53

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 26.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.80
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
```



```
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   20.50
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.46
    HALFSTREET FLOOD WIDTH(FEET) =   14.90
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.26
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.94
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20376.00 = 14502.83 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020376.0 TO NODE LR020376.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  63.92
  RAINFALL INTENSITY(INCH/HR) =   0.93
  AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.80
  EFFECTIVE STREAM AREA(ACRES) =   559.54
  TOTAL STREAM AREA(ACRES) =   559.54
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    168.93
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1      2253.36   46.13     4068.99  LR020120.0
     2       168.93   63.92      559.54  LR020360.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.37;30M= 0.76;1H= 1.00;3H= 1.78;6H= 2.58;24H= 5.75
  S-GRAPH: VALLEY(DEV.)= 41.6%;VALLEY(UNDEV.)/DESERT= 58.4%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.77; LAG(HR) = 0.62; Fm(INCH/HR) = 0.59; Ybar = 0.59
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.80; 30M = 0.80; 1HR = 0.80;
  3HR = 0.97; 6HR = 0.98; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   4628.53
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20376.00 = 22921.16 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0405; Lca/L=0.4,n=.0363; Lca/L=0.5,n=.0334;Lca/L=0.6,n=.0311
  TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =     942.32
  PEAK FLOW RATE(CFS) =   2453.78

****************************************************************************
  FLOW PROCESS FROM NODE LR020376.0 TO NODE LR020376.0 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20376.dna
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =   4628.53  TC(MIN.) =     46.13
```

```
  AREA-AVERAGED Fm(INCH/HR)=  0.59   Ybar =  0.59
  PEAK FLOW RATE(CFS)    =   2453.78
================================================================================
================================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

```
******************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                        Analysis prepared by:

                        San Bernardino County
                  Transportation/ Flood Control Department

                        Water Resources Division

 ************************ DESCRIPTION OF STUDY *************************
* LR 0204ZZ FILE                                                       *
*  25-YEAR STORM                                                       *
*                                                                      *
 **********************************************************************

  FILE NAME: LR0204ZZ.Z25
  TIME/DATE OF STUDY: 11:26 02/23/2006
==============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 0.9700

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
```



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 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


******************************************************************************
  FLOW PROCESS FROM NODE LR020400.0 TO NODE LR020401.0 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   924.07
  ELEVATION DATA: UPSTREAM(FEET) =   1720.00  DOWNSTREAM(FEET) =   1670.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.338
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.636
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.14      0.75      0.90    56   13.40
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       10.27      0.75      0.60    56   11.34
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     20.46
  TOTAL AREA(ACRES) =     10.41   PEAK FLOW RATE(CFS) =     20.46

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72

******************************************************************************
  FLOW PROCESS FROM NODE LR020401.0 TO NODE LR020402.0 IS CODE =  63
------------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
==============================================================================
  UPSTREAM ELEVATION(FEET) = 1670.00  DOWNSTREAM ELEVATION(FEET) = 1657.00
  STREET LENGTH(FEET) =   293.15   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00
```

```
 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.72

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      28.39
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.45
   HALFSTREET FLOOD WIDTH(FEET) =   16.16
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.20
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.34
 STREET FLOW TRAVEL TIME(MIN.) =   0.94   Tc(MIN.) =  12.28
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.513
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        0.06      0.75      0.90    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        8.48      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =    8.54      SUBAREA RUNOFF(CFS) =   15.85
 EFFECTIVE AREA(ACRES) =     18.95    AREA-AVERAGED Fm(INCH/HR) =  0.45
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =     18.95        PEAK FLOW RATE(CFS) =      35.16

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.48   HALFSTREET FLOOD WIDTH(FEET) =  17.57
 FLOW VELOCITY(FEET/SEC.) =  5.49   DEPTH*VELOCITY(FT*FT/SEC.) =   2.62
 LONGEST FLOWPATH FROM NODE  20400.00 TO NODE  20402.00 =  1217.22 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020402.0 TO NODE LR020403.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1657.00  DOWNSTREAM ELEVATION(FEET) = 1655.00
 STREET LENGTH(FEET) =   198.50   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
```



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 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      37.59
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.59
   HALFSTREET FLOOD WIDTH(FEET) =   22.47
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.47
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.05
 STREET FLOW TRAVEL TIME(MIN.) =   0.95   Tc(MIN.) =  13.23
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.403
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        2.76      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =    2.76      SUBAREA RUNOFF(CFS) =    4.85
 EFFECTIVE AREA(ACRES) =     21.71    AREA-AVERAGED Fm(INCH/HR) =  0.45
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =     21.71        PEAK FLOW RATE(CFS) =      38.14

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.59   HALFSTREET FLOOD WIDTH(FEET) =  22.59
 FLOW VELOCITY(FEET/SEC.) =  3.49   DEPTH*VELOCITY(FT*FT/SEC.) =   2.06
 LONGEST FLOWPATH FROM NODE  20400.00 TO NODE  20403.00 =  1415.72 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020403.0 TO NODE LR020404.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1655.00  DOWNSTREAM ELEVATION(FEET) = 1645.00
 STREET LENGTH(FEET) =   470.13   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.89

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      44.95
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.56
   HALFSTREET FLOOD WIDTH(FEET) =   20.94
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.73
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  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.64
 STREET FLOW TRAVEL TIME(MIN.) =   1.66   Tc(MIN.) =  14.89
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.239
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        8.38      0.75      0.60    56
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        0.08      0.75      0.90    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =    8.46      SUBAREA RUNOFF(CFS) =   13.61
 EFFECTIVE AREA(ACRES) =     30.17    AREA-AVERAGED Fm(INCH/HR) =  0.45
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =     30.17        PEAK FLOW RATE(CFS) =      48.54

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.57   HALFSTREET FLOOD WIDTH(FEET) =  21.55
 FLOW VELOCITY(FEET/SEC.) =  4.84   DEPTH*VELOCITY(FT*FT/SEC.) =   2.77
 LONGEST FLOWPATH FROM NODE  20400.00 TO NODE  20404.00 =  1885.85 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020404.0 TO NODE LR020405.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1645.00  DOWNSTREAM ELEVATION(FEET) = 1635.00
 STREET LENGTH(FEET) =   344.26   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.81

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      56.09
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.57
   HALFSTREET FLOOD WIDTH(FEET) =   21.43
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.66
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.22
 STREET FLOW TRAVEL TIME(MIN.) =   1.01   Tc(MIN.) =  15.90
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.152
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
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 "3-4 DWELLINGS/ACRE"       B        9.77      0.75      0.60    56
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        0.09      0.75      0.90    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =    9.86      SUBAREA RUNOFF(CFS) =   15.09
 EFFECTIVE AREA(ACRES) =     40.03    AREA-AVERAGED Fm(INCH/HR) =  0.45
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =     40.03        PEAK FLOW RATE(CFS) =      61.28

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.58   HALFSTREET FLOOD WIDTH(FEET) =  22.16
 FLOW VELOCITY(FEET/SEC.) =  5.80   DEPTH*VELOCITY(FT*FT/SEC.) =   3.39
 LONGEST FLOWPATH FROM NODE  20400.00 TO NODE  20405.00 =  2230.11 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020405.0 TO NODE LR020406.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1635.00  DOWNSTREAM ELEVATION(FEET) = 1620.00
 STREET LENGTH(FEET) =   701.02   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.91

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      75.11
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.69
   HALFSTREET FLOOD WIDTH(FEET) =   27.34
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.10
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.54
 STREET FLOW TRAVEL TIME(MIN.) =   2.29   Tc(MIN.) =  18.19
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.985
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       20.00      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =   20.00      SUBAREA RUNOFF(CFS) =   27.65
 EFFECTIVE AREA(ACRES) =     60.03    AREA-AVERAGED Fm(INCH/HR) =  0.45
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =     60.03        PEAK FLOW RATE(CFS) =      82.91
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  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.71   HALFSTREET FLOOD WIDTH(FEET) =  28.20
  FLOW VELOCITY(FEET/SEC.) =  5.29   DEPTH*VELOCITY(FT*FT/SEC.) =   3.76
  LONGEST FLOWPATH FROM NODE  20400.00 TO NODE  20406.00 =  2931.13 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020406.0 TO NODE LR020407.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1620.00  DOWNSTREAM ELEVATION(FEET) = 1612.00
  STREET LENGTH(FEET) =   570.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.02

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      86.29
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.76
    HALFSTREET FLOOD WIDTH(FEET) =   30.58
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.67
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.54
  STREET FLOW TRAVEL TIME(MIN.) =   2.03   Tc(MIN.) =  20.23
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.863
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.31      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    5.31      SUBAREA RUNOFF(CFS) =    6.76
  EFFECTIVE AREA(ACRES) =     65.34    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     65.34        PEAK FLOW RATE(CFS) =      83.06

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.75   HALFSTREET FLOOD WIDTH(FEET) =  30.21
  FLOW VELOCITY(FEET/SEC.) =  4.61   DEPTH*VELOCITY(FT*FT/SEC.) =   3.46
  LONGEST FLOWPATH FROM NODE  20400.00 TO NODE  20407.00 =  3501.13 FEET.
```



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****************************************************************************
  FLOW PROCESS FROM NODE LR020407.0 TO NODE LR020408.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1612.00  DOWNSTREAM ELEVATION(FEET) = 1590.00
  STREET LENGTH(FEET) =   804.76   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.85

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      96.48
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.72
    HALFSTREET FLOOD WIDTH(FEET) =   28.44
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.05
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.33
  STREET FLOW TRAVEL TIME(MIN.) =   2.22   Tc(MIN.) =  22.45
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.750
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       22.89      0.75      0.60    56
  COMMERCIAL                 B        0.02      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   22.91      SUBAREA RUNOFF(CFS) =   26.83
  EFFECTIVE AREA(ACRES) =     88.25    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     88.25        PEAK FLOW RATE(CFS) =     103.26

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.73   HALFSTREET FLOOD WIDTH(FEET) =  29.11
  FLOW VELOCITY(FEET/SEC.) =  6.17   DEPTH*VELOCITY(FT*FT/SEC.) =   4.50
  LONGEST FLOWPATH FROM NODE  20400.00 TO NODE  20408.00 =  4305.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020408.0 TO NODE LR020409.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1590.00  DOWNSTREAM ELEVATION(FEET) = 1570.00
  STREET LENGTH(FEET) =   498.42   CURB HEIGHT(INCHES) =  8.0
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```
STREET HALFWIDTH(FEET) = 26.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.78

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     135.43
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.74
  HALFSTREET FLOOD WIDTH(FEET) =   29.84
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.70
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.72
STREET FLOW TRAVEL TIME(MIN.) =   1.08   Tc(MIN.) =  23.52
*  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.701
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B       51.42      0.75      0.60    56
COMMERCIAL                 B        4.09      0.75      0.10    56
RESIDENTIAL
".4 DWELLING/ACRE"         B        0.43      0.75      0.90    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.57
SUBAREA AREA(ACRES) =   55.94      SUBAREA RUNOFF(CFS) =   64.34
EFFECTIVE AREA(ACRES) =    144.19    AREA-AVERAGED Fm(INCH/HR) =  0.44
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.59
TOTAL AREA(ACRES) =    144.19        PEAK FLOW RATE(CFS) =     163.75

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.78   HALFSTREET FLOOD WIDTH(FEET) =  31.80
FLOW VELOCITY(FEET/SEC.) =  8.19   DEPTH*VELOCITY(FT*FT/SEC.) =   6.41

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.78
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  13.29
PIPE-FLOW(CFS) =     41.77
PIPEFLOW TRAVEL TIME(MIN.) =   0.63    Tc(MIN.) =  23.07
*  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.721
SUBAREA AREA(ACRES) =   55.94      SUBAREA RUNOFF(CFS) =   65.35
TOTAL AREA(ACRES) =    144.19        PEAK FLOW RATE(CFS) =    166.34

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72
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  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  124.57
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.73
    HALFSTREET FLOOD WIDTH(FEET) =   29.05
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.48
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.44
  LONGEST FLOWPATH FROM NODE  20400.00 TO NODE  20409.00 =  4804.31 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020409.0 TO NODE LR020410.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1570.00  DOWNSTREAM ELEVATION(FEET) = 1533.00
  STREET LENGTH(FEET) =  1374.92   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.86

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     193.47
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.87
    HALFSTREET FLOOD WIDTH(FEET) =   36.13
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.47
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.50
  STREET FLOW TRAVEL TIME(MIN.) =   3.07   Tc(MIN.) =  26.14
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.597
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.01      0.61      1.00    66
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       52.45      0.75      0.60    56
  PUBLIC PARK                B        0.03      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   52.49      SUBAREA RUNOFF(CFS) =   54.24
  EFFECTIVE AREA(ACRES) =    196.68    AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.59
  TOTAL AREA(ACRES) =    196.68        PEAK FLOW RATE(CFS) =     204.47

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72

  END OF SUBAREA STREET FLOW HYDRAULICS:
```

```
  DEPTH(FEET) = 0.88   HALFSTREET FLOOD WIDTH(FEET) =  36.80
  FLOW VELOCITY(FEET/SEC.) =  7.61   DEPTH*VELOCITY(FT*FT/SEC.) =   6.72

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.86
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.77
  PIPE-FLOW(CFS) =     46.84
  PIPEFLOW TRAVEL TIME(MIN.) =   1.95    Tc(MIN.) =  25.02
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.640
  SUBAREA AREA(ACRES) =   52.49      SUBAREA RUNOFF(CFS) =   56.24
  TOTAL AREA(ACRES) =    196.68        PEAK FLOW RATE(CFS) =    211.99

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  165.15
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.83
    HALFSTREET FLOOD WIDTH(FEET) =   34.18
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.14
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.93
  LONGEST FLOWPATH FROM NODE  20400.00 TO NODE  20410.00 =  6179.23 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020410.0 TO NODE LR020410.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020376.0 TO NODE LR020376.0 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20376.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2453.78    Tc(MIN.) =  46.13
  AREA-AVERAGED Fm(INCH/HR) =  0.59    Ybar = 0.59
  TOTAL AREA(ACRES) =    4628.53
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20376.00 = 22921.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020376.0 TO NODE LR020376.0 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2453.78    Tc(MIN.) =  46.13
  AREA-AVERAGED Fm(INCH/HR) =  0.59    Ybar = 0.59
  TOTAL AREA(ACRES) =    4628.53
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20376.00 = 22921.16 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR020376.0 TO NODE LR020376.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020376.0 TO NODE LR020410.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1600.00  DOWNSTREAM(FEET) =   1533.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2846.26   CHANNEL SLOPE =  0.0235
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   6.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   2453.78
  FLOW VELOCITY(FEET/SEC.) =  29.69   FLOW DEPTH(FEET) =   4.09
  TRAVEL TIME(MIN.) =   1.60   Tc(MIN.) =  47.73
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20410.00 = 25767.42 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020410.0 TO NODE LR020410.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  47.73
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.113
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B       25.52      0.75       0.60    56
  PUBLIC PARK                 B        5.30      0.75       0.85    56
  SCHOOL                      B        8.19      0.75       0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
  SUBAREA AREA(ACRES) =   39.01
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.37;30M= 0.76;1H= 1.00;3H= 1.78;6H= 2.58;24H= 5.74
  S-GRAPH: VALLEY(DEV.)= 42.1%;VALLEY(UNDEV.)/DESERT= 57.9%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.80; LAG(HR) = 0.64; Fm(INCH/HR) = 0.58; Ybar = 0.59
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.80; 30M = 0.80; 1HR = 0.80;
  3HR = 0.97; 6HR = 0.98; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   4667.54
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20410.00 = 25767.42 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0378; Lca/L=0.4,n=.0339; Lca/L=0.5,n=.0311;Lca/L=0.6,n=.0291
  TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =     949.70
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   2448.30
  TOTAL AREA(ACRES) =   4667.54       PEAK FLOW RATE(CFS) =    2453.78
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR020410.0 TO NODE LR020410.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     2453.78    Tc(MIN.) =  47.73
  AREA-AVERAGED Fm(INCH/HR) =  0.58    Ybar = 0.59
  TOTAL AREA(ACRES) =    4667.54
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20410.00 = 25767.42 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    211.99  25.02    1.640  0.75( 0.44) 0.59   196.7 LR020400.0
  LONGEST FLOWPATH FROM NODE  20400.00 TO NODE  20410.00 =  6179.23 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.37;30M= 0.76;1H= 1.00;3H= 1.78;6H= 2.56;24H= 5.70
  S-GRAPH: VALLEY(DEV.)= 44.4%;VALLEY(UNDEV.)/DESERT= 55.6%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.80; LAG(HR) = 0.64; Fm(INCH/HR) = 0.58; Ybar = 0.59
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.79; 30M = 0.79; 1HR = 0.79;
  3HR = 0.97; 6HR = 0.98; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   4864.22
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20410.00 = 25767.42 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0378; Lca/L=0.4,n=.0339; Lca/L=0.5,n=.0311;Lca/L=0.6,n=.0291
  TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =     989.55
  PEAK FLOW RATE(CFS) =    2550.61

****************************************************************************
  FLOW PROCESS FROM NODE LR020410.0 TO NODE LR020410.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020410.0 TO NODE LR020452.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1533.00  DOWNSTREAM(FEET) =   1510.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1329.02   CHANNEL SLOPE =  0.0173
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   6.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   2550.61
  FLOW VELOCITY(FEET/SEC.) =  26.82   FLOW DEPTH(FEET) =   4.52
  TRAVEL TIME(MIN.) =   0.83   Tc(MIN.) =  48.55
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20452.00 = 27096.44 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020452.0 TO NODE LR020452.0 IS CODE =  81
----------------------------------------------------------------------------
```



```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  48.55
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.101
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       25.77      0.75       0.60    56
  PUBLIC PARK                B        1.54      0.75       0.85    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.79      0.61       1.00    66
  COMMERCIAL                 B        0.05      0.75       0.10    56
  MOBILE HOME PARK           B        5.02      0.75       0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.57
  SUBAREA AREA(ACRES) =   33.17
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.37;30M= 0.76;1H= 1.00;3H= 1.78;6H= 2.56;24H= 5.69
  S-GRAPH: VALLEY(DEV.)= 44.8%;VALLEY(UNDEV.)/DESERT= 55.2%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.81; LAG(HR) = 0.65; Fm(INCH/HR) = 0.58; Ybar = 0.59
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.79; 30M = 0.79; 1HR = 0.79;
  3HR = 0.97; 6HR = 0.98; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   4897.39
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20452.00 = 27096.44 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0368; Lca/L=0.4,n=.0330; Lca/L=0.5,n=.0303;Lca/L=0.6,n=.0283
  TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =     996.56
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   2537.38
  TOTAL AREA(ACRES) =   4897.39       PEAK FLOW RATE(CFS) =    2550.61
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72

****************************************************************************
  FLOW PROCESS FROM NODE LR020452.0 TO NODE LR020452.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020420.0 TO NODE LR020421.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   575.26
  ELEVATION DATA: UPSTREAM(FEET) =   1740.00  DOWNSTREAM(FEET) =   1735.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.027
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.680
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
```

```
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.69      0.98      0.60    32   13.52
  MOBILE HOME PARK           A        4.22      0.98      0.25    32   11.03
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.30
  SUBAREA RUNOFF(CFS) =     10.56
  TOTAL AREA(ACRES) =      4.91   PEAK FLOW RATE(CFS) =     10.56

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72

****************************************************************************
  FLOW PROCESS FROM NODE LR020421.0 TO NODE LR020422.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1735.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1725.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   643.67
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.365
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A        2.50      0.98      0.25    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.99      0.98      0.60    32
  COMMERCIAL                 A        2.87      0.98      0.10    32
  COMMERCIAL                 B        1.82      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.05      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.87
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.29
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     20.28
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.19
  AVERAGE FLOW DEPTH(FEET) =   0.59   FLOOD WIDTH(FEET) =   31.45
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   2.56   Tc(MIN.) =  13.59
  SUBAREA AREA(ACRES) =   10.23       SUBAREA RUNOFF(CFS) =   19.50
  EFFECTIVE AREA(ACRES) =   15.14     AREA-AVERAGED Fm(INCH/HR) =   0.26
  AREA-AVERAGED Fp(INCH/HR) =   0.90  AREA-AVERAGED Ap =   0.29
  TOTAL AREA(ACRES) =     15.14         PEAK FLOW RATE(CFS) =      28.66

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.64   FLOOD WIDTH(FEET) =   37.28
  FLOW VELOCITY(FEET/SEC.) =   4.38   DEPTH*VELOCITY(FT*FT/SEC) =   2.81
  LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20422.00 =  1218.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020422.0 TO NODE LR020423.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
```



```
============================================================================
  UPSTREAM ELEVATION(FEET) = 1725.00  DOWNSTREAM ELEVATION(FEET) = 1712.00
  STREET LENGTH(FEET) =   299.17   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.80

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      35.68
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.51
    HALFSTREET FLOOD WIDTH(FEET) =   17.51
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.48
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.79
  STREET FLOW TRAVEL TIME(MIN.) =   0.91   Tc(MIN.) =  14.50
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.274
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A        2.62      0.98      0.25    32
  SCHOOL                     A        0.15      0.98      0.60    32
  COMMERCIAL                 A        1.21      0.98      0.10    32
  COMMERCIAL                 B        2.01      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.63      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.84
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.27
  SUBAREA AREA(ACRES) =    7.62      SUBAREA RUNOFF(CFS) =   14.04
  EFFECTIVE AREA(ACRES) =     22.76    AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.88  AREA-AVERAGED Ap =  0.28
  TOTAL AREA(ACRES) =     22.76        PEAK FLOW RATE(CFS) =      41.48

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.53   HALFSTREET FLOOD WIDTH(FEET) =  18.60
  FLOW VELOCITY(FEET/SEC.) =  5.68   DEPTH*VELOCITY(FT*FT/SEC.) =   3.01
  LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20423.00 =  1518.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020423.0 TO NODE LR020424.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1712.00  DOWNSTREAM ELEVATION(FEET) = 1703.00
  STREET LENGTH(FEET) =   258.55   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
```

```
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      46.25
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.56
    HALFSTREET FLOOD WIDTH(FEET) =   20.32
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.35
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.02
  STREET FLOW TRAVEL TIME(MIN.) =   0.80   Tc(MIN.) =  15.30
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.202
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A        0.47      0.98      0.25    32
  MOBILE HOME PARK           B        0.58      0.75      0.25    56
  COMMERCIAL                 B        2.83      0.75      0.10    56
  COMMERCIAL                 A        0.03      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.39      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.77
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.26
  SUBAREA AREA(ACRES) =    5.30      SUBAREA RUNOFF(CFS) =    9.55
  EFFECTIVE AREA(ACRES) =     28.06    AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  0.28
  TOTAL AREA(ACRES) =     28.06        PEAK FLOW RATE(CFS) =      49.54

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.58   HALFSTREET FLOOD WIDTH(FEET) =  20.87
  FLOW VELOCITY(FEET/SEC.) =  5.45   DEPTH*VELOCITY(FT*FT/SEC.) =   3.14
  LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20424.00 =  1776.65 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020424.0 TO NODE LR020425.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1703.00  DOWNSTREAM ELEVATION(FEET) = 1696.00
  STREET LENGTH(FEET) =   197.56   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
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  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      52.36
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.58
    HALFSTREET FLOOD WIDTH(FEET) =   21.26
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.56
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.24
  STREET FLOW TRAVEL TIME(MIN.) =   0.59   Tc(MIN.) =  15.89
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.152
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B        0.06      0.75      0.25    56
  COMMERCIAL                 B        1.63      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.63      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.35
  SUBAREA AREA(ACRES) =    3.32      SUBAREA RUNOFF(CFS) =    5.65
  EFFECTIVE AREA(ACRES) =     31.38    AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.85  AREA-AVERAGED Ap =  0.29
  TOTAL AREA(ACRES) =     31.38        PEAK FLOW RATE(CFS) =      53.94

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.59   HALFSTREET FLOOD WIDTH(FEET) =  21.49
  FLOW VELOCITY(FEET/SEC.) =  5.61   DEPTH*VELOCITY(FT*FT/SEC.) =   3.30
  LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20425.00 =  1974.21 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020425.0 TO NODE LR020426.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1696.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1685.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   834.27
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.943
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.17      0.75      0.60    56
  MOBILE HOME PARK           B        0.01      0.75      0.25    56
  COMMERCIAL                 B        0.54      0.75      0.10    56
  COMMERCIAL                 A        3.24      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        4.60      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.93
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
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  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     60.68
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.71
  AVERAGE FLOW DEPTH(FEET) =   0.78   FLOOD WIDTH(FEET) =   53.71
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   2.96   Tc(MIN.) =  18.85
  SUBAREA AREA(ACRES) =    9.56       SUBAREA RUNOFF(CFS) =   13.50
  EFFECTIVE AREA(ACRES) =   40.94     AREA-AVERAGED Fm(INCH/HR) =   0.27
  AREA-AVERAGED Fp(INCH/HR) =   0.87  AREA-AVERAGED Ap =   0.31
  TOTAL AREA(ACRES) =     40.94         PEAK FLOW RATE(CFS) =      61.53

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.78   FLOOD WIDTH(FEET) =   54.01
  FLOW VELOCITY(FEET/SEC.) =   4.72   DEPTH*VELOCITY(FT*FT/SEC) =   3.70
  LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20426.00 =  2808.48 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020426.0 TO NODE LR020427.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1685.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1676.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   311.63
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.896
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 A        1.60      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        6.06      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.60      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.96
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     66.79
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.59
  AVERAGE FLOW DEPTH(FEET) =   0.73   FLOOD WIDTH(FEET) =   47.28
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.79   Tc(MIN.) =  19.64
  SUBAREA AREA(ACRES) =    8.26       SUBAREA RUNOFF(CFS) =   10.52
  EFFECTIVE AREA(ACRES) =   49.20     AREA-AVERAGED Fm(INCH/HR) =   0.31
  AREA-AVERAGED Fp(INCH/HR) =   0.89  AREA-AVERAGED Ap =   0.34
  TOTAL AREA(ACRES) =     49.20         PEAK FLOW RATE(CFS) =      70.31

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.74   FLOOD WIDTH(FEET) =   48.33
  FLOW VELOCITY(FEET/SEC.) =   6.66   DEPTH*VELOCITY(FT*FT/SEC) =   4.89
  LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20427.00 =  3120.11 FEET.

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  FLOW PROCESS FROM NODE LR020427.0 TO NODE LR020428.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1676.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1668.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   300.94
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.853
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        5.53      0.98      0.60    32
  COMMERCIAL                 A        0.78      0.98      0.10    32
  MOBILE HOME PARK           A        2.12      0.98      0.25    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.52      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.96
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.47
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     75.94
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.53
  AVERAGE FLOW DEPTH(FEET) =   0.76   FLOOD WIDTH(FEET) =   50.87
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.77   Tc(MIN.) =  20.41
  SUBAREA AREA(ACRES) =    8.95       SUBAREA RUNOFF(CFS) =   11.27
  EFFECTIVE AREA(ACRES) =   58.15     AREA-AVERAGED Fm(INCH/HR) =   0.33
  AREA-AVERAGED Fp(INCH/HR) =   0.91  AREA-AVERAGED Ap =   0.36
  TOTAL AREA(ACRES) =     58.15         PEAK FLOW RATE(CFS) =      79.67

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.77   FLOOD WIDTH(FEET) =   51.91
  FLOW VELOCITY(FEET/SEC.) =   6.59   DEPTH*VELOCITY(FT*FT/SEC) =   5.05
  LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20428.00 =  3421.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020428.0 TO NODE LR020429.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1668.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1664.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   362.52
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.787
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 A        0.97      0.98      0.10    32
  RESIDENTIAL
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  "3-4 DWELLINGS/ACRE"       A       13.68      0.98      0.60    32
  MOBILE HOME PARK           A        3.07      0.98      0.25    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.25      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.96
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.52
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     90.68
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.78
  AVERAGE FLOW DEPTH(FEET) =   0.88   FLOOD WIDTH(FEET) =   65.66
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   1.26   Tc(MIN.) =  21.67
  SUBAREA AREA(ACRES) =   18.97       SUBAREA RUNOFF(CFS) =   22.05
  EFFECTIVE AREA(ACRES) =   77.12     AREA-AVERAGED Fm(INCH/HR) =   0.37
  AREA-AVERAGED Fp(INCH/HR) =   0.92  AREA-AVERAGED Ap =   0.40
  TOTAL AREA(ACRES) =     77.12         PEAK FLOW RATE(CFS) =      98.28

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.90   FLOOD WIDTH(FEET) =   67.90
  FLOW VELOCITY(FEET/SEC.) =   4.86   DEPTH*VELOCITY(FT*FT/SEC) =   4.38
  LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20429.00 =  3783.57 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020429.0 TO NODE LR020430.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1664.00  DOWNSTREAM ELEVATION(FEET) = 1628.00
  STREET LENGTH(FEET) =  1363.05   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.83

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     123.31
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.73
    HALFSTREET FLOOD WIDTH(FEET) =   29.49
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.80
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.97
  STREET FLOW TRAVEL TIME(MIN.) =   3.34   Tc(MIN.) =  25.01
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.640
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       21.36      0.98      0.60    32
  COMMERCIAL                 A        7.94      0.98      0.10    32
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  MOBILE HOME PARK           A       14.89      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.39
  SUBAREA AREA(ACRES) =   44.19      SUBAREA RUNOFF(CFS) =   50.01
  EFFECTIVE AREA(ACRES) =   121.31    AREA-AVERAGED Fm(INCH/HR) =  0.38
  AREA-AVERAGED Fp(INCH/HR) =  0.94  AREA-AVERAGED Ap =  0.40
  TOTAL AREA(ACRES) =    121.31        PEAK FLOW RATE(CFS) =     138.07

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.76   HALFSTREET FLOOD WIDTH(FEET) =  30.77
  FLOW VELOCITY(FEET/SEC.) =  7.02   DEPTH*VELOCITY(FT*FT/SEC.) =   5.30
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1363.1 FT WITH ELEVATION-DROP =  36.0 FT, IS   89.9 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20430.00
  LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20430.00 =  5146.62 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020430.0 TO NODE LR020449.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1628.00  DOWNSTREAM ELEVATION(FEET) = 1625.00
  STREET LENGTH(FEET) =  1350.21   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     144.14
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.16
    HALFSTREET FLOOD WIDTH(FEET) =   51.10
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.72
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.16
  STREET FLOW TRAVEL TIME(MIN.) =   8.27   Tc(MIN.) =  33.27
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.382
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 A        9.50      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.03      0.98      0.60    32
  COMMERCIAL                 B        0.37      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.15
  SUBAREA AREA(ACRES) =   10.90      SUBAREA RUNOFF(CFS) =   12.15
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  EFFECTIVE AREA(ACRES) =    132.21    AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.94  AREA-AVERAGED Ap =  0.38
  TOTAL AREA(ACRES) =    132.21        PEAK FLOW RATE(CFS) =     138.07
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.14   HALFSTREET FLOOD WIDTH(FEET) =  50.24
  FLOW VELOCITY(FEET/SEC.) =  2.70   DEPTH*VELOCITY(FT*FT/SEC.) =   3.09

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.17
  PIPE-FLOW(CFS) =     73.39
  PIPEFLOW TRAVEL TIME(MIN.) =   4.35    Tc(MIN.) =  29.36
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.489
  SUBAREA AREA(ACRES) =   10.90      SUBAREA RUNOFF(CFS) =   13.21
  TOTAL AREA(ACRES) =    132.21        PEAK FLOW RATE(CFS) =    138.07
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   64.68
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.88
    HALFSTREET FLOOD WIDTH(FEET) =   37.18
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.28
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.01
  LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20449.00 =  6496.83 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020449.0 TO NODE LR020449.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  29.36
  RAINFALL INTENSITY(INCH/HR) =   1.49
  AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.94
  AREA-AVERAGED Ap =  0.38
  EFFECTIVE STREAM AREA(ACRES) =   132.21
  TOTAL STREAM AREA(ACRES) =   132.21
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    138.07

****************************************************************************
  FLOW PROCESS FROM NODE LR020440.0 TO NODE LR020441.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
```



```
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   918.39
  ELEVATION DATA: UPSTREAM(FEET) =   1735.00  DOWNSTREAM(FEET) =   1706.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.596
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.475
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.48      0.75      0.60    56   12.60
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =      9.99
  TOTAL AREA(ACRES) =      5.48   PEAK FLOW RATE(CFS) =      9.99

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72

****************************************************************************
  FLOW PROCESS FROM NODE LR020441.0 TO NODE LR020442.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1706.00  DOWNSTREAM ELEVATION(FEET) = 1705.00
  STREET LENGTH(FEET) =   478.44   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      13.65
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.55
    HALFSTREET FLOOD WIDTH(FEET) =   20.70
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.47
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.81
  STREET FLOW TRAVEL TIME(MIN.) =   5.44   Tc(MIN.) =  18.03
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.995
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.22      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    5.22      SUBAREA RUNOFF(CFS) =    7.27
```

```
  EFFECTIVE AREA(ACRES) =     10.70    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     10.70        PEAK FLOW RATE(CFS) =      14.89

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.57   HALFSTREET FLOOD WIDTH(FEET) =  21.37
  FLOW VELOCITY(FEET/SEC.) =  1.51   DEPTH*VELOCITY(FT*FT/SEC.) =   0.86
  LONGEST FLOWPATH FROM NODE  20440.00 TO NODE  20442.00 =  1396.83 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020442.0 TO NODE LR020443.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1705.00  DOWNSTREAM ELEVATION(FEET) = 1704.00
  STREET LENGTH(FEET) =   220.75   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      19.17
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.55
    HALFSTREET FLOOD WIDTH(FEET) =   20.33
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.13
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.16
  STREET FLOW TRAVEL TIME(MIN.) =   1.73   Tc(MIN.) =  19.76
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.889
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        6.59      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    6.59      SUBAREA RUNOFF(CFS) =    8.54
  EFFECTIVE AREA(ACRES) =     17.29    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     17.29        PEAK FLOW RATE(CFS) =      22.41

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.57   HALFSTREET FLOOD WIDTH(FEET) =  21.55
```



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  FLOW VELOCITY(FEET/SEC.) =  2.24   DEPTH*VELOCITY(FT*FT/SEC.) =   1.28
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  220.8 FT WITH ELEVATION-DROP =   1.0 FT, IS   13.7 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20443.00
  LONGEST FLOWPATH FROM NODE  20440.00 TO NODE  20443.00 =  1617.58 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020443.0 TO NODE LR020444.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1704.00  DOWNSTREAM ELEVATION(FEET) = 1702.00
  STREET LENGTH(FEET) =   263.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      26.77
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.56
    HALFSTREET FLOOD WIDTH(FEET) =   20.94
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.82
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.57
  STREET FLOW TRAVEL TIME(MIN.) =   1.56   Tc(MIN.) =  21.32
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.805
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        7.15      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    7.15      SUBAREA RUNOFF(CFS) =    8.73
  EFFECTIVE AREA(ACRES) =     24.44    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     24.44        PEAK FLOW RATE(CFS) =      29.83

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.57   HALFSTREET FLOOD WIDTH(FEET) =  21.74
  FLOW VELOCITY(FEET/SEC.) =  2.93   DEPTH*VELOCITY(FT*FT/SEC.) =   1.68
  LONGEST FLOWPATH FROM NODE  20440.00 TO NODE  20444.00 =  1881.08 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020444.0 TO NODE LR020445.0 IS CODE =  63
----------------------------------------------------------------------------
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```
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) = 1702.00  DOWNSTREAM ELEVATION(FEET) = 1701.00
  STREET LENGTH(FEET) =   498.43   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      37.43
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.75
    HALFSTREET FLOOD WIDTH(FEET) =   30.59
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.92
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.45
  STREET FLOW TRAVEL TIME(MIN.) =   4.32   Tc(MIN.) =  25.63
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.616
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       14.46      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   14.46      SUBAREA RUNOFF(CFS) =   15.19
  EFFECTIVE AREA(ACRES) =     38.90    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     38.90        PEAK FLOW RATE(CFS) =      40.86

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.77   HALFSTREET FLOOD WIDTH(FEET) =  31.69
  FLOW VELOCITY(FEET/SEC.) =  1.96   DEPTH*VELOCITY(FT*FT/SEC.) =   1.52
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  498.4 FT WITH ELEVATION-DROP =   1.0 FT, IS   21.0 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20445.00
  LONGEST FLOWPATH FROM NODE  20440.00 TO NODE  20445.00 =  2379.51 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020445.0 TO NODE LR020446.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) = 1701.00  DOWNSTREAM ELEVATION(FEET) = 1700.00
  STREET LENGTH(FEET) =   790.41   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00
```



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  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      50.20
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.89
    HALFSTREET FLOOD WIDTH(FEET) =   37.61
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.73
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.54
  STREET FLOW TRAVEL TIME(MIN.) =   7.62   Tc(MIN.) =  33.25
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.382
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       22.19      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   22.19      SUBAREA RUNOFF(CFS) =   18.64
  EFFECTIVE AREA(ACRES) =     61.09    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     61.09        PEAK FLOW RATE(CFS) =      51.32

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.90   HALFSTREET FLOOD WIDTH(FEET) =  37.97
  FLOW VELOCITY(FEET/SEC.) =  1.74   DEPTH*VELOCITY(FT*FT/SEC.) =   1.56
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  790.4 FT WITH ELEVATION-DROP =   1.0 FT, IS   25.9 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20446.00
  LONGEST FLOWPATH FROM NODE  20440.00 TO NODE  20446.00 =  3169.92 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020446.0 TO NODE LR020447.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) = 1700.00  DOWNSTREAM ELEVATION(FEET) = 1670.00
  STREET LENGTH(FEET) =   962.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
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  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.83

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      62.12
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.62
    HALFSTREET FLOOD WIDTH(FEET) =   23.28
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.54
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.46
  STREET FLOW TRAVEL TIME(MIN.) =   2.89   Tc(MIN.) =  36.14
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.315
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.08      0.75      0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       24.90      0.98      0.60    32
  SCHOOL                     A        1.29      0.98      0.60    32
  SCHOOL                     B        3.53      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.93
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   31.80      SUBAREA RUNOFF(CFS) =   21.57
  EFFECTIVE AREA(ACRES) =     92.89    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.81  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     92.89        PEAK FLOW RATE(CFS) =      69.19

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.64   HALFSTREET FLOOD WIDTH(FEET) =  24.27
  FLOW VELOCITY(FEET/SEC.) =  5.69   DEPTH*VELOCITY(FT*FT/SEC.) =   3.66
  LONGEST FLOWPATH FROM NODE  20440.00 TO NODE  20447.00 =  4131.92 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020447.0 TO NODE LR020448.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1670.00  DOWNSTREAM ELEVATION(FEET) = 1645.00
  STREET LENGTH(FEET) =   877.54   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.85

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      84.28
```



```
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.69
    HALFSTREET FLOOD WIDTH(FEET) =   27.10
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.83
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.01
  STREET FLOW TRAVEL TIME(MIN.) =   2.51   Tc(MIN.) =  38.65
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.263
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        9.63      0.98      0.60    32
  COMMERCIAL                 A       12.07      0.98      0.10    32
  COMMERCIAL                 B        0.31      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.23      0.75      0.60    56
  SCHOOL                     B       11.63      0.75      0.60    56
  SCHOOL                     A        1.95      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.44
  SUBAREA AREA(ACRES) =   37.82      SUBAREA RUNOFF(CFS) =   30.21
  EFFECTIVE AREA(ACRES) =    130.71    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.82  AREA-AVERAGED Ap =  0.55
  TOTAL AREA(ACRES) =    130.71        PEAK FLOW RATE(CFS) =      95.06

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.71   HALFSTREET FLOOD WIDTH(FEET) =  28.14
  FLOW VELOCITY(FEET/SEC.) =  6.09   DEPTH*VELOCITY(FT*FT/SEC.) =   4.32
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  877.5 FT WITH ELEVATION-DROP =  25.0 FT, IS   88.2 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20448.00
  LONGEST FLOWPATH FROM NODE  20440.00 TO NODE  20448.00 =  5009.46 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020448.0 TO NODE LR020449.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1645.00  DOWNSTREAM ELEVATION(FEET) = 1625.00
  STREET LENGTH(FEET) =   820.27   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.88

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     106.60
```

```
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.75
  HALFSTREET FLOOD WIDTH(FEET) =   29.97
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.01
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.48
 STREET FLOW TRAVEL TIME(MIN.) =   2.27   Tc(MIN.) =  40.93
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.220
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 A        3.48      0.98      0.10    32
 COMMERCIAL                 B        6.53      0.75      0.10    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        0.34      0.98      0.60    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.38      0.75      0.60    56
 SCHOOL                     A        0.64      0.98      0.60    32
 SCHOOL                     B       16.30      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.77
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.43
 SUBAREA AREA(ACRES) =   28.67      SUBAREA RUNOFF(CFS) =   23.09
 EFFECTIVE AREA(ACRES) =    159.38    AREA-AVERAGED Fm(INCH/HR) =  0.43
 AREA-AVERAGED Fp(INCH/HR) =  0.81  AREA-AVERAGED Ap =  0.53
 TOTAL AREA(ACRES) =    159.38        PEAK FLOW RATE(CFS) =     113.13

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.76   HALFSTREET FLOOD WIDTH(FEET) =  30.52
 FLOW VELOCITY(FEET/SEC.) =  6.15   DEPTH*VELOCITY(FT*FT/SEC.) =   4.65
 LONGEST FLOWPATH FROM NODE  20440.00 TO NODE  20449.00 =  5829.73 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020449.0 TO NODE LR020449.0 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  40.93
 RAINFALL INTENSITY(INCH/HR) =   1.22
 AREA-AVERAGED Fm(INCH/HR) =  0.43
 AREA-AVERAGED Fp(INCH/HR) =  0.81
 AREA-AVERAGED Ap =  0.53
 EFFECTIVE STREAM AREA(ACRES) =   159.38
 TOTAL STREAM AREA(ACRES) =   159.38
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    113.13

 ** CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    138.07  29.36    1.489  0.94( 0.36) 0.38   132.2 LR020420.0
     2    113.13  40.93    1.220  0.81( 0.43) 0.53   159.4 LR020440.0

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
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 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    246.92  29.36    1.489  0.87( 0.39) 0.45   246.6 LR020420.0
     2    218.42  40.93    1.220  0.86( 0.40) 0.46   291.6 LR020440.0

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    246.92    Tc(MIN.) =    29.36
 EFFECTIVE AREA(ACRES) =   246.56   AREA-AVERAGED Fm(INCH/HR) =  0.39
 AREA-AVERAGED Fp(INCH/HR) =  0.87  AREA-AVERAGED Ap =  0.45
 TOTAL AREA(ACRES) =    291.59
 LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20449.00 =  6496.83 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020449.0 TO NODE LR020450.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1625.00  DOWNSTREAM ELEVATION(FEET) = 1595.00
 STREET LENGTH(FEET) =  1304.02   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.89

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     300.42
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  1.02
  HALFSTREET FLOOD WIDTH(FEET) =   43.58
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.96
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    8.10
 STREET FLOW TRAVEL TIME(MIN.) =   2.73   Tc(MIN.) =  32.09
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.412
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 A       33.74      0.98      0.10    32
 MOBILE HOME PARK           B       22.38      0.75      0.25    56
 COMMERCIAL                 B       19.61      0.75      0.10    56
 AGRICULTURAL FAIR COVER
 "ORCHARDS"                 B        9.23      0.63      1.00    65
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        8.18      0.75      0.60    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        7.04      0.98      0.60    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.77
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.29
```

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 SUBAREA AREA(ACRES) =  100.18      SUBAREA RUNOFF(CFS) =  107.01
 EFFECTIVE AREA(ACRES) =    346.74    AREA-AVERAGED Fm(INCH/HR) =  0.34
 AREA-AVERAGED Fp(INCH/HR) =  0.85  AREA-AVERAGED Ap =  0.40
 TOTAL AREA(ACRES) =    391.77        PEAK FLOW RATE(CFS) =     333.53

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 1.05   HALFSTREET FLOOD WIDTH(FEET) =  45.29
 FLOW VELOCITY(FEET/SEC.) =  8.18   DEPTH*VELOCITY(FT*FT/SEC.) =   8.60

 *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
        THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.89
 SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
 ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
 ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
 ASSUME FULL-FLOWING PIPELINE
 PIPE-FLOW VELOCITY(FEET/SEC.) =  15.30
 PIPE-FLOW(CFS) =    169.12
 PIPEFLOW TRAVEL TIME(MIN.) =   1.42    Tc(MIN.) =  30.78
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.448
 SUBAREA AREA(ACRES) =  100.18      SUBAREA RUNOFF(CFS) =  110.23
 TOTAL AREA(ACRES) =    391.77        PEAK FLOW RATE(CFS) =    344.69

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  175.57
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.86
   HALFSTREET FLOOD WIDTH(FEET) =   35.89
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.88
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.94
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  1304.0 FT WITH ELEVATION-DROP =  30.0 FT, IS  216.7 CFS,
        WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  20450.00

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    344.69  30.78    1.448  0.85( 0.34) 0.40   346.7 LR020420.0
     2    296.13  42.49    1.193  0.85( 0.35) 0.42   391.8 LR020440.0
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    344.69  Tc(MIN.) =  30.78
 AREA-AVERAGED Fm(INCH/HR) =  0.34  AREA-AVERAGED Fp(INCH/HR) =  0.85
 AREA-AVERAGED Ap =  0.40  EFFECTIVE AREA(ACRES) =    346.74
 LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20450.00 =  7800.85 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020450.0 TO NODE LR020451.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1595.00  DOWNSTREAM(FEET) =   1530.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2921.86   CHANNEL SLOPE =  0.0222
```



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 CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
 CHANNEL FLOW THRU SUBAREA(CFS) =    344.69
 FLOW VELOCITY(FEET/SEC.) =   9.24   FLOW DEPTH(FEET) =   2.49
 TRAVEL TIME(MIN.) =   5.27   Tc(MIN.) =  36.05
 LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20451.00 = 10722.71 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020451.0 TO NODE LR020451.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  36.05
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.317
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       19.78      0.75      0.60    56
 COMMERCIAL                 B        5.95      0.75      0.10    56
 MOBILE HOME PARK           B        6.72      0.75      0.25    56
 PUBLIC PARK                B        6.76      0.75      0.85    56
 SCHOOL                     B        5.51      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.52
 SUBAREA AREA(ACRES) =   44.72      SUBAREA RUNOFF(CFS) =   37.38
 EFFECTIVE AREA(ACRES) =    391.46   AREA-AVERAGED Fm(INCH/HR) =  0.40
 AREA-AVERAGED Fp(INCH/HR) =  0.83  AREA-AVERAGED Ap =  0.48
 TOTAL AREA(ACRES) =    436.49       PEAK FLOW RATE(CFS) =     344.69
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72

****************************************************************************
 FLOW PROCESS FROM NODE LR020451.0 TO NODE LR020452.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1530.00  DOWNSTREAM(FEET) =   1510.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1273.13   CHANNEL SLOPE =  0.0157
 CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
 CHANNEL FLOW THRU SUBAREA(CFS) =    344.69
 FLOW VELOCITY(FEET/SEC.) =   8.17   FLOW DEPTH(FEET) =   2.73
 TRAVEL TIME(MIN.) =   2.60   Tc(MIN.) =  38.65
 LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20452.00 = 11995.84 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020452.0 TO NODE LR020452.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  38.65
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.263
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

```
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        6.50      0.75       0.60    56
  COMMERCIAL                 B        3.31      0.75       0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.25      0.98       0.60    32
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.07      0.61       1.00    66
  PUBLIC PARK                B        0.12      0.75       0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.44
  SUBAREA AREA(ACRES) =   10.25      SUBAREA RUNOFF(CFS) =    8.56
  EFFECTIVE AREA(ACRES) =    401.71   AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.83  AREA-AVERAGED Ap =  0.48
  TOTAL AREA(ACRES) =    446.74       PEAK FLOW RATE(CFS) =     344.69
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72

****************************************************************************
  FLOW PROCESS FROM NODE LR020452.0 TO NODE LR020452.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    344.69  38.65    1.263  0.83( 0.35) 0.42   401.7 LR020420.0
      2    296.13  50.71    1.073  0.83( 0.36) 0.43   446.7 LR020440.0
  LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20452.00 = 11995.84 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     2550.61    Tc(MIN.) =  48.55
  AREA-AVERAGED Fm(INCH/HR) =  0.58    Ybar = 0.59
  TOTAL AREA(ACRES) =    4897.39
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20452.00 = 27096.44 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.37;30M= 0.76;1H= 0.99;3H= 1.76;6H= 2.54;24H= 5.61
  S-GRAPH: VALLEY(DEV.)= 49.2%;VALLEY(UNDEV.)/DESERT= 50.8%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.81; LAG(HR) = 0.65; Fm(INCH/HR) = 0.56; Ybar = 0.58
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.78; 30M = 0.78; 1HR = 0.78;
  3HR = 0.97; 6HR = 0.98; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   5344.13
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20452.00 = 27096.44 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0368; Lca/L=0.4,n=.0330; Lca/L=0.5,n=.0303;Lca/L=0.6,n=.0283
  TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =    1102.49
  PEAK FLOW RATE(CFS) =    2780.85

****************************************************************************
  FLOW PROCESS FROM NODE LR020452.0 TO NODE LR020452.0 IS CODE =  12
----------------------------------------------------------------------------
```



```
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020452.0 TO NODE LR020453.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1510.00  DOWNSTREAM(FEET) =   1440.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3395.49   CHANNEL SLOPE =  0.0206
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   6.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   2780.85
  FLOW VELOCITY(FEET/SEC.) =  29.25   FLOW DEPTH(FEET) =   4.52
  TRAVEL TIME(MIN.) =   1.94   Tc(MIN.) =  50.49
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20453.00 = 30491.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020453.0 TO NODE LR020453.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  50.49
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.076
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B       20.13      0.75       0.25    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       19.32      0.75       0.60    56
  SCHOOL                     B        8.94      0.75       0.60    56
  COMMERCIAL                 B        4.10      0.75       0.10    56
  PUBLIC PARK                B        1.64      0.75       0.85    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.19      0.98       0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.44
  SUBAREA AREA(ACRES) =   54.32
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.37;30M= 0.76;1H= 0.99;3H= 1.76;6H= 2.53;24H= 5.60
  S-GRAPH: VALLEY(DEV.)= 49.7%;VALLEY(UNDEV.)/DESERT= 50.3%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.84; LAG(HR) = 0.67; Fm(INCH/HR) = 0.56; Ybar = 0.57
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.78; 30M = 0.78; 1HR = 0.78;
  3HR = 0.97; 6HR = 0.98; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   5398.45
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20453.00 = 30491.93 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0345; Lca/L=0.4,n=.0309; Lca/L=0.5,n=.0284;Lca/L=0.6,n=.0265
  TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =    1115.98
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   2706.35
  TOTAL AREA(ACRES) =   5398.45       PEAK FLOW RATE(CFS) =    2780.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR020453.0 TO NODE LR020454.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1440.00  DOWNSTREAM(FEET) =   1395.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3128.68   CHANNEL SLOPE =  0.0144
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   6.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   2780.85
  FLOW VELOCITY(FEET/SEC.) =  25.66   FLOW DEPTH(FEET) =   4.95
  TRAVEL TIME(MIN.) =   2.03   Tc(MIN.) =  52.52
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20454.00 = 33620.61 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020454.0 TO NODE LR020454.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  52.52
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.051
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  SCHOOL                     B       17.44      0.75      0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.70      0.75      0.60    56
  PUBLIC PARK                B        9.17      0.75      0.85    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        5.37      0.75      0.50    56
  COMMERCIAL                 B        1.64      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
  SUBAREA AREA(ACRES) =   37.32
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.37;30M= 0.76;1H= 0.99;3H= 1.76;6H= 2.53;24H= 5.60
  S-GRAPH: VALLEY(DEV.)= 50.1%;VALLEY(UNDEV.)/DESERT= 49.9%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.88; LAG(HR) = 0.70; Fm(INCH/HR) = 0.56; Ybar = 0.57
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.78; 30M = 0.78; 1HR = 0.78;
  3HR = 0.97; 6HR = 0.98; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   5435.77
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20454.00 = 33620.61 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0328; Lca/L=0.4,n=.0294; Lca/L=0.5,n=.0270;Lca/L=0.6,n=.0252
  TIME OF PEAK FLOW(HR) = 16.75  RUNOFF VOLUME(AF) =    1123.04
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   2697.54
  TOTAL AREA(ACRES) =   5435.77       PEAK FLOW RATE(CFS) =    2780.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.72

****************************************************************************
  FLOW PROCESS FROM NODE LR020454.0 TO NODE LR020454.0 IS CODE = 152
```



```
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20454.dna
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =   5435.77  TC(MIN.) =     52.52
  AREA-AVERAGED Fm(INCH/HR)=  0.56   Ybar =  0.57
  PEAK FLOW RATE(CFS)   =   2780.85
============================================================================
============================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
         (c) Copyright 1983-2002 Advanced Engineering Software (aes)
             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                          San Bernardino County
                    Transportation/ Flood Control Department

                          Water Resources Division

 ************************* DESCRIPTION OF STUDY *************************
* LR 0205ZZ FILE                                                       *
*  25-YEAR STORM                                                       *
*                                                                      *
 ************************************************************************

  FILE NAME: LR0205ZZ.Z25
  TIME/DATE OF STUDY: 11:26 02/23/2006
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 0.9700

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
```



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 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


************************************************************************
  FLOW PROCESS FROM NODE LR020500.0 TO NODE LR020501.0 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   672.35
  ELEVATION DATA: UPSTREAM(FEET) =   1595.00  DOWNSTREAM(FEET) =   1591.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.525
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.183
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.95      0.75       0.60    56   15.53
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.88      0.98       0.60    32   15.53
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 A        0.12      0.88       1.00    44   26.60
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.61
  SUBAREA RUNOFF(CFS) =      6.01
  TOTAL AREA(ACRES) =      3.95   PEAK FLOW RATE(CFS) =      6.01

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.82

************************************************************************
  FLOW PROCESS FROM NODE LR020501.0 TO NODE LR020502.0 IS CODE =  63
------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
========================================================================
  UPSTREAM ELEVATION(FEET) = 1591.00  DOWNSTREAM ELEVATION(FEET) = 1587.00
```

```
 STREET LENGTH(FEET) =   262.68   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.75
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.46
   HALFSTREET FLOOD WIDTH(FEET) =   16.48
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.09
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.41
 STREET FLOW TRAVEL TIME(MIN.) =   1.42   Tc(MIN.) =  16.94
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.071
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        3.30      0.75      0.60    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        0.37      0.98      0.60    32
 AGRICULTURAL FAIR COVER
 "ORCHARDS"                 A        0.16      0.88      1.00    44
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.78
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.62
 SUBAREA AREA(ACRES) =    3.83      SUBAREA RUNOFF(CFS) =    5.49
 EFFECTIVE AREA(ACRES) =      7.78    AREA-AVERAGED Fm(INCH/HR) =  0.49
 AREA-AVERAGED Fp(INCH/HR) =  0.79  AREA-AVERAGED Ap =  0.61
 TOTAL AREA(ACRES) =      7.78        PEAK FLOW RATE(CFS) =      11.10

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.82

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.49   HALFSTREET FLOOD WIDTH(FEET) =  18.00
 FLOW VELOCITY(FEET/SEC.) =  3.26   DEPTH*VELOCITY(FT*FT/SEC.) =   1.59
 LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20502.00 =   935.03 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020502.0 TO NODE LR020503.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1587.00  DOWNSTREAM ELEVATION(FEET) = 1580.00
 STREET LENGTH(FEET) =   296.66   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
```



```
 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.86

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      14.54
   ***STREET FLOW SPLITS OVER STREET-CROWN***
   FULL DEPTH(FEET) =    0.49   FLOOD WIDTH(FEET) =   18.00
   FULL HALF-STREET VELOCITY(FEET/SEC.) =    4.06
   SPLIT DEPTH(FEET) =    0.23   SPLIT FLOOD WIDTH(FEET) =    5.38
   SPLIT FLOW(CFS) =    0.90   SPLIT VELOCITY(FEET/SEC.) =    2.21
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.49
   HALFSTREET FLOOD WIDTH(FEET) =   18.00
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.06
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.97
 STREET FLOW TRAVEL TIME(MIN.) =   1.22   Tc(MIN.) =  18.16
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.987
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        2.45      0.75      0.60    56
 MOBILE HOME PARK           B        1.73      0.75      0.25    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        0.21      0.98      0.60    32
 MOBILE HOME PARK           A        0.20      0.98      0.25    32
 AGRICULTURAL FAIR COVER
 "ORCHARDS"                 A        0.11      0.88      1.00    44
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.77
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.47
 SUBAREA AREA(ACRES) =    4.70      SUBAREA RUNOFF(CFS) =    6.88
 EFFECTIVE AREA(ACRES) =     12.48    AREA-AVERAGED Fm(INCH/HR) =  0.44
 AREA-AVERAGED Fp(INCH/HR) =  0.79  AREA-AVERAGED Ap =  0.56
 TOTAL AREA(ACRES) =     12.48        PEAK FLOW RATE(CFS) =      17.39

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.82

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.49   HALFSTREET FLOOD WIDTH(FEET) =  18.00
 FLOW VELOCITY(FEET/SEC.) =  4.06   DEPTH*VELOCITY(FT*FT/SEC.) =   1.97
 LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20503.00 =  1231.69 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020503.0 TO NODE LR020504.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1580.00  DOWNSTREAM ELEVATION(FEET) = 1570.00
 STREET LENGTH(FEET) =   416.03   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
```

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 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.86

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      22.25
   ***STREET FLOW SPLITS OVER STREET-CROWN***
   FULL DEPTH(FEET) =    0.49   FLOOD WIDTH(FEET) =   18.00
   FULL HALF-STREET VELOCITY(FEET/SEC.) =    4.10
   SPLIT DEPTH(FEET) =    0.42   SPLIT FLOOD WIDTH(FEET) =   14.84
   SPLIT FLOW(CFS) =    8.48   SPLIT VELOCITY(FEET/SEC.) =    3.66
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.49
   HALFSTREET FLOOD WIDTH(FEET) =   18.00
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.10
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.99
 STREET FLOW TRAVEL TIME(MIN.) =   1.69   Tc(MIN.) =  19.85
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.884
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.28      0.75      0.60    56
 MOBILE HOME PARK           B        5.56      0.75      0.25    56
 MOBILE HOME PARK           A        0.58      0.98      0.25    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.77
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.27
 SUBAREA AREA(ACRES) =    6.42      SUBAREA RUNOFF(CFS) =    9.71
 EFFECTIVE AREA(ACRES) =     18.90    AREA-AVERAGED Fm(INCH/HR) =  0.36
 AREA-AVERAGED Fp(INCH/HR) =  0.78  AREA-AVERAGED Ap =  0.46
 TOTAL AREA(ACRES) =     18.90        PEAK FLOW RATE(CFS) =      25.94

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.82

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.49   HALFSTREET FLOOD WIDTH(FEET) =  18.00
 FLOW VELOCITY(FEET/SEC.) =  4.10   DEPTH*VELOCITY(FT*FT/SEC.) =   1.99
 LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20504.00 =  1647.72 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020504.0 TO NODE LR020505.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1570.00  DOWNSTREAM ELEVATION(FEET) = 1560.00
 STREET LENGTH(FEET) =   387.53   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
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 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      29.73
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.49
   HALFSTREET FLOOD WIDTH(FEET) =   18.00
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.33
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.12
 STREET FLOW TRAVEL TIME(MIN.) =   1.49   Tc(MIN.) =  21.34
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.803
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        4.33      0.75      0.60    56
 MOBILE HOME PARK           B        1.58      0.75      0.25    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.51
 SUBAREA AREA(ACRES) =    5.91      SUBAREA RUNOFF(CFS) =    7.58
 EFFECTIVE AREA(ACRES) =     24.81    AREA-AVERAGED Fm(INCH/HR) =  0.36
 AREA-AVERAGED Fp(INCH/HR) =  0.77  AREA-AVERAGED Ap =  0.47
 TOTAL AREA(ACRES) =     24.81        PEAK FLOW RATE(CFS) =      32.15

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.82

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.50   HALFSTREET FLOOD WIDTH(FEET) =  18.01
 FLOW VELOCITY(FEET/SEC.) =  4.45   DEPTH*VELOCITY(FT*FT/SEC.) =   2.23
 LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20505.00 =  2035.25 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020505.0 TO NODE LR020506.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1560.00  DOWNSTREAM ELEVATION(FEET) = 1535.00
 STREET LENGTH(FEET) =  1240.51   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      41.72
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
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    STREET FLOW DEPTH(FEET) =  0.55
    HALFSTREET FLOOD WIDTH(FEET) =   20.58
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.53
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.50
  STREET FLOW TRAVEL TIME(MIN.) =   4.56   Tc(MIN.) =  25.90
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.606
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       14.33      0.75      0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        4.53      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   18.86      SUBAREA RUNOFF(CFS) =   19.08
  EFFECTIVE AREA(ACRES) =     43.67    AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.79  AREA-AVERAGED Ap =  0.53
  TOTAL AREA(ACRES) =     43.67        PEAK FLOW RATE(CFS) =      46.82

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.82

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.57   HALFSTREET FLOOD WIDTH(FEET) =  21.49
  FLOW VELOCITY(FEET/SEC.) =  4.70   DEPTH*VELOCITY(FT*FT/SEC.) =   2.68
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1240.5 FT WITH ELEVATION-DROP =  25.0 FT, IS   28.9 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20506.00
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20506.00 =  3275.76 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020506.0 TO NODE LR020507.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1535.00  DOWNSTREAM ELEVATION(FEET) = 1518.00
  STREET LENGTH(FEET) =   947.01   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      53.92
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.60
    HALFSTREET FLOOD WIDTH(FEET) =   23.08
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.74
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.85
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  STREET FLOW TRAVEL TIME(MIN.) =   3.33   Tc(MIN.) =  29.24
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.493
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        6.54      0.75      0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        9.86      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.88
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   16.40      SUBAREA RUNOFF(CFS) =   14.21
  EFFECTIVE AREA(ACRES) =     60.07    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.82  AREA-AVERAGED Ap =  0.55
  TOTAL AREA(ACRES) =     60.07        PEAK FLOW RATE(CFS) =      56.60

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.82

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.61   HALFSTREET FLOOD WIDTH(FEET) =  23.51
  FLOW VELOCITY(FEET/SEC.) =  4.80   DEPTH*VELOCITY(FT*FT/SEC.) =   2.93
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20507.00 =  4222.77 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020507.0 TO NODE LR020508.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1518.00  DOWNSTREAM ELEVATION(FEET) = 1490.50
  STREET LENGTH(FEET) =  1523.12   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      63.49
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.63
    HALFSTREET FLOOD WIDTH(FEET) =   24.55
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.97
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.13
  STREET FLOW TRAVEL TIME(MIN.) =   5.11   Tc(MIN.) =  34.35
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.356
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       11.25      0.75      0.60    56
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  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        6.62      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.83
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   17.87      SUBAREA RUNOFF(CFS) =   13.77
  EFFECTIVE AREA(ACRES) =     77.94    AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.82  AREA-AVERAGED Ap =  0.56
  TOTAL AREA(ACRES) =     77.94        PEAK FLOW RATE(CFS) =      62.94

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.82

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.63   HALFSTREET FLOOD WIDTH(FEET) =  24.48
  FLOW VELOCITY(FEET/SEC.) =  4.95   DEPTH*VELOCITY(FT*FT/SEC.) =   3.12
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20508.00 =  5745.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020508.0 TO NODE LR020509.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1490.50  DOWNSTREAM ELEVATION(FEET) = 1490.00
  STREET LENGTH(FEET) =   621.21   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      63.61
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.06
    HALFSTREET FLOOD WIDTH(FEET) =   45.65
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.53
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.63
  STREET FLOW TRAVEL TIME(MIN.) =   6.75   Tc(MIN.) =  41.09
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.217
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        2.36      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    2.36      SUBAREA RUNOFF(CFS) =    1.34
  EFFECTIVE AREA(ACRES) =     80.30    AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.83  AREA-AVERAGED Ap =  0.56
  TOTAL AREA(ACRES) =     80.30        PEAK FLOW RATE(CFS) =      62.94
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
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  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.82

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.06   HALFSTREET FLOOD WIDTH(FEET) =  45.47
  FLOW VELOCITY(FEET/SEC.) =  1.53   DEPTH*VELOCITY(FT*FT/SEC.) =   1.62
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20509.00 =  6367.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020509.0 TO NODE LR020518.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1490.00  DOWNSTREAM ELEVATION(FEET) = 1489.50
  STREET LENGTH(FEET) =   654.22   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      63.52
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.07
    HALFSTREET FLOOD WIDTH(FEET) =   46.08
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.50
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.61
  STREET FLOW TRAVEL TIME(MIN.) =   7.25   Tc(MIN.) =  48.35
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.104
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        2.47      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    2.47      SUBAREA RUNOFF(CFS) =    1.15
  EFFECTIVE AREA(ACRES) =     82.77    AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.83  AREA-AVERAGED Ap =  0.56
  TOTAL AREA(ACRES) =     82.77        PEAK FLOW RATE(CFS) =      62.94
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.82

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.06   HALFSTREET FLOOD WIDTH(FEET) =  45.90
  FLOW VELOCITY(FEET/SEC.) =  1.50   DEPTH*VELOCITY(FT*FT/SEC.) =   1.60
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20518.00 =  7021.32 FEET.
```

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****************************************************************************
  FLOW PROCESS FROM NODE LR020518.0 TO NODE LR020518.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  48.35
  RAINFALL INTENSITY(INCH/HR) =   1.10
  AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.83
  AREA-AVERAGED Ap =  0.56
  EFFECTIVE STREAM AREA(ACRES) =    82.77
  TOTAL STREAM AREA(ACRES) =    82.77
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     62.94

****************************************************************************
  FLOW PROCESS FROM NODE LR020510.0 TO NODE LR020511.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   568.77
  ELEVATION DATA: UPSTREAM(FEET) =   1595.00  DOWNSTREAM(FEET) =   1590.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.909
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.858
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.24      0.98      0.60    32   13.43
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 A        0.98      0.88      1.00    44   23.01
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.57      0.75      0.60    56   13.43
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        1.82      0.63      1.00    65   23.01
  COMMERCIAL                 B        0.06      0.75      0.10    56    9.91
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.73
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.90
  SUBAREA RUNOFF(CFS) =      7.27
  TOTAL AREA(ACRES) =      3.67   PEAK FLOW RATE(CFS) =      7.27

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.82

****************************************************************************
  FLOW PROCESS FROM NODE LR020511.0 TO NODE LR020512.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1590.00  DOWNSTREAM ELEVATION(FEET) = 1580.00
  STREET LENGTH(FEET) =   249.41   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00
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  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.78

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      11.55
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.38
    HALFSTREET FLOOD WIDTH(FEET) =   11.03
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.11
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.56
  STREET FLOW TRAVEL TIME(MIN.) =   1.01   Tc(MIN.) =  10.92
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.696
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 A        1.59      0.88      1.00    44
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        2.00      0.63      1.00    65
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.46      0.75      0.60    56
  MOBILE HOME PARK           B        0.58      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.87
  SUBAREA AREA(ACRES) =    4.63      SUBAREA RUNOFF(CFS) =    8.56
  EFFECTIVE AREA(ACRES) =      8.30    AREA-AVERAGED Fm(INCH/HR) =  0.65
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.88
  TOTAL AREA(ACRES) =      8.30        PEAK FLOW RATE(CFS) =      15.29

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.82

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.41   HALFSTREET FLOOD WIDTH(FEET) =  12.49
  FLOW VELOCITY(FEET/SEC.) =  4.37   DEPTH*VELOCITY(FT*FT/SEC.) =   1.78
  LONGEST FLOWPATH FROM NODE  20510.00 TO NODE  20512.00 =   818.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020512.0 TO NODE LR020513.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1580.00  DOWNSTREAM ELEVATION(FEET) = 1575.00
  STREET LENGTH(FEET) =   306.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
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 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.98

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      22.00
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.51
   HALFSTREET FLOOD WIDTH(FEET) =   17.53
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.37
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.72
 STREET FLOW TRAVEL TIME(MIN.) =   1.52   Tc(MIN.) =  12.44
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.494
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL FAIR COVER
 "ORCHARDS"                 A        1.37      0.88      1.00    44
 MOBILE HOME PARK           A        1.25      0.98      0.25    32
 AGRICULTURAL FAIR COVER
 "ORCHARDS"                 B        1.07      0.63      1.00    65
 MOBILE HOME PARK           B        2.91      0.75      0.25    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.58      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.78
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.53
 SUBAREA AREA(ACRES) =    7.18      SUBAREA RUNOFF(CFS) =   13.42
 EFFECTIVE AREA(ACRES) =     15.48    AREA-AVERAGED Fm(INCH/HR) =  0.54
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.72
 TOTAL AREA(ACRES) =     15.48        PEAK FLOW RATE(CFS) =      27.21

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.82

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.54   HALFSTREET FLOOD WIDTH(FEET) =  19.12
 FLOW VELOCITY(FEET/SEC.) =  3.54   DEPTH*VELOCITY(FT*FT/SEC.) =   1.91
 LONGEST FLOWPATH FROM NODE  20510.00 TO NODE  20513.00 =  1124.68 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020513.0 TO NODE LR020514.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1575.00  DOWNSTREAM ELEVATION(FEET) = 1570.00
 STREET LENGTH(FEET) =   416.53   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
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 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.06

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      37.38
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.62
   HALFSTREET FLOOD WIDTH(FEET) =   22.98
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.42
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.11
 STREET FLOW TRAVEL TIME(MIN.) =   2.03   Tc(MIN.) =  14.47
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.277
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 MOBILE HOME PARK           A        3.78      0.98      0.25    32
 MOBILE HOME PARK           B        6.42      0.75      0.25    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.82      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.82
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.28
 SUBAREA AREA(ACRES) =   11.02      SUBAREA RUNOFF(CFS) =   20.34
 EFFECTIVE AREA(ACRES) =     26.50    AREA-AVERAGED Fm(INCH/HR) =  0.41
 AREA-AVERAGED Fp(INCH/HR) =  0.77  AREA-AVERAGED Ap =  0.53
 TOTAL AREA(ACRES) =     26.50        PEAK FLOW RATE(CFS) =      44.53

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.82

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.65   HALFSTREET FLOOD WIDTH(FEET) =  24.62
 FLOW VELOCITY(FEET/SEC.) =  3.56   DEPTH*VELOCITY(FT*FT/SEC.) =   2.32
 LONGEST FLOWPATH FROM NODE  20510.00 TO NODE  20514.00 =  1541.21 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020514.0 TO NODE LR020515.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1570.00  DOWNSTREAM ELEVATION(FEET) = 1565.00
 STREET LENGTH(FEET) =   392.53   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.04

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      53.57
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.68
   HALFSTREET FLOOD WIDTH(FEET) =   26.67
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.83
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  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.60
 STREET FLOW TRAVEL TIME(MIN.) =   1.71   Tc(MIN.) =  16.18
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.130
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 MOBILE HOME PARK           B        5.83      0.75      0.25    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        4.98      0.75      0.60    56
 MOBILE HOME PARK           A        0.20      0.98      0.25    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.41
 SUBAREA AREA(ACRES) =   11.01      SUBAREA RUNOFF(CFS) =   18.06
 EFFECTIVE AREA(ACRES) =     37.51    AREA-AVERAGED Fm(INCH/HR) =  0.38
 AREA-AVERAGED Fp(INCH/HR) =  0.76  AREA-AVERAGED Ap =  0.50
 TOTAL AREA(ACRES) =     37.51        PEAK FLOW RATE(CFS) =      59.08

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.82

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.70   HALFSTREET FLOOD WIDTH(FEET) =  27.53
 FLOW VELOCITY(FEET/SEC.) =  3.96   DEPTH*VELOCITY(FT*FT/SEC.) =   2.76
 LONGEST FLOWPATH FROM NODE  20510.00 TO NODE  20515.00 =  1933.74 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020515.0 TO NODE LR020516.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1565.00  DOWNSTREAM ELEVATION(FEET) = 1530.00
 STREET LENGTH(FEET) =  1215.58   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      83.26
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.69
   HALFSTREET FLOOD WIDTH(FEET) =   26.98
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.81
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.99
 STREET FLOW TRAVEL TIME(MIN.) =   3.49   Tc(MIN.) =  19.67
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.894
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
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 "3-4 DWELLINGS/ACRE"       B       20.48      0.75      0.60    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        2.53      0.98      0.60    32
 MOBILE HOME PARK           B       12.12      0.75      0.25    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.77
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.48
 SUBAREA AREA(ACRES) =   35.13      SUBAREA RUNOFF(CFS) =   48.24
 EFFECTIVE AREA(ACRES) =     72.64    AREA-AVERAGED Fm(INCH/HR) =  0.37
 AREA-AVERAGED Fp(INCH/HR) =  0.77  AREA-AVERAGED Ap =  0.49
 TOTAL AREA(ACRES) =     72.64        PEAK FLOW RATE(CFS) =      99.38

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.82

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.72   HALFSTREET FLOOD WIDTH(FEET) =  28.50
 FLOW VELOCITY(FEET/SEC.) =  6.20   DEPTH*VELOCITY(FT*FT/SEC.) =   4.44
 LONGEST FLOWPATH FROM NODE  20510.00 TO NODE  20516.00 =  3149.32 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020516.0 TO NODE LR020517.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1530.00  DOWNSTREAM ELEVATION(FEET) = 1510.00
 STREET LENGTH(FEET) =  1115.01   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.95

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     117.72
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.80
   HALFSTREET FLOOD WIDTH(FEET) =   32.59
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.60
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.47
 STREET FLOW TRAVEL TIME(MIN.) =   3.32   Tc(MIN.) =  22.99
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.725
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A       23.04      0.98      0.60    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       11.30      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.90
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =   34.34      SUBAREA RUNOFF(CFS) =   36.62
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  EFFECTIVE AREA(ACRES) =    106.98    AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.81  AREA-AVERAGED Ap =  0.52
  TOTAL AREA(ACRES) =    106.98        PEAK FLOW RATE(CFS) =     124.94

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.82

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.81   HALFSTREET FLOOD WIDTH(FEET) =  33.26
  FLOW VELOCITY(FEET/SEC.) =  5.70   DEPTH*VELOCITY(FT*FT/SEC.) =   4.63
  LONGEST FLOWPATH FROM NODE  20510.00 TO NODE  20517.00 =  4264.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020517.0 TO NODE LR020518.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1510.00  DOWNSTREAM ELEVATION(FEET) = 1489.50
  STREET LENGTH(FEET) =  1340.04   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.99

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     143.76
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.87
    HALFSTREET FLOOD WIDTH(FEET) =   35.95
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.61
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.86
  STREET FLOW TRAVEL TIME(MIN.) =   3.98   Tc(MIN.) =  26.97
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.567
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       37.81      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.14      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.95
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   41.95      SUBAREA RUNOFF(CFS) =   37.60
  EFFECTIVE AREA(ACRES) =    148.93    AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  0.55
  TOTAL AREA(ACRES) =    148.93        PEAK FLOW RATE(CFS) =     147.36

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.82
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  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.87   HALFSTREET FLOOD WIDTH(FEET) =  36.25
  FLOW VELOCITY(FEET/SEC.) =  5.65   DEPTH*VELOCITY(FT*FT/SEC.) =   4.93
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1340.0 FT WITH ELEVATION-DROP =  20.5 FT, IS   56.6 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20518.00
  LONGEST FLOWPATH FROM NODE  20510.00 TO NODE  20518.00 =  5604.37 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020518.0 TO NODE LR020518.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  26.97
  RAINFALL INTENSITY(INCH/HR) =   1.57
  AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.86
  AREA-AVERAGED Ap =  0.55
  EFFECTIVE STREAM AREA(ACRES) =   148.93
  TOTAL STREAM AREA(ACRES) =   148.93
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    147.36

  ** CONFLUENCE DATA **
   STREAM     Q      Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     62.94  48.35    1.104  0.83( 0.47) 0.56    82.8 LR020500.0
      2    147.36  26.97    1.567  0.86( 0.47) 0.55   148.9 LR020510.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q      Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    207.93  26.97    1.567  0.85( 0.47) 0.55   195.1 LR020510.0
      2    148.21  48.35    1.104  0.85( 0.47) 0.55   231.7 LR020500.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    207.93    Tc(MIN.) =    26.97
  EFFECTIVE AREA(ACRES) =   195.10   AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.85  AREA-AVERAGED Ap =  0.55
  TOTAL AREA(ACRES) =    231.70
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20518.00 =  7021.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020518.0 TO NODE LR020519.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1489.50
  DOWNSTREAM NODE ELEVATION(FEET) =  1440.00
  FLOW LENGTH(FEET) =  2632.61   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
```

```
 DEPTH OF FLOW IN  60.0 INCH PIPE IS  32.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  18.88
 PIPE-FLOW(CFS) =    207.93
 *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
 PIPEFLOW TRAVEL TIME(MIN.) =   2.47    Tc(MIN.) =  29.44
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.487
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 SCHOOL                     A       21.65      0.98      0.60    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A       27.03      0.98      0.60    32
 MOBILE HOME PARK           A        8.46      0.98      0.25    32
 SCHOOL                     B        7.51      0.75      0.60    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        5.29      0.75      0.60    56
 MOBILE HOME PARK           B        2.31      0.75      0.25    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.93
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.55
 SUBAREA AREA(ACRES) =   72.25      SUBAREA RUNOFF(CFS) =   63.65
 EFFECTIVE AREA(ACRES) =    267.35    AREA-AVERAGED Fm(INCH/HR) =  0.48
 AREA-AVERAGED Fp(INCH/HR) =  0.87  AREA-AVERAGED Ap =  0.55
 TOTAL AREA(ACRES) =    303.95        PEAK FLOW RATE(CFS) =    242.65

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.82

 STREET CROSS-SECTION INFORMATION:
 CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 26.00
 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   34.72
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.57
   HALFSTREET FLOOD WIDTH(FEET) =   20.46
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.97
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.25

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    242.65  29.44    1.487  0.87( 0.48) 0.55   267.3 LR020510.0
     2    161.94  51.03    1.069  0.87( 0.48) 0.55   304.0 LR020500.0
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    242.65  Tc(MIN.) =  29.44
 AREA-AVERAGED Fm(INCH/HR) =  0.48  AREA-AVERAGED Fp(INCH/HR) =  0.87
 AREA-AVERAGED Ap =  0.55  EFFECTIVE AREA(ACRES) =    267.35
 LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20519.00 =  9653.93 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020519.0 TO NODE LR020520.0 IS CODE =  33
```



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----------------------------------------------------------------------------
 >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
 >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1440.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1410.00
 FLOW LENGTH(FEET) =  1552.52   MANNING'S N =  0.013

 USER SPECIFIED PIPE DIAMETER(INCH) =  66.00    NUMBER OF PIPES =   1
 DEPTH OF FLOW IN  66.0 INCH PIPE IS  33.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  19.84
 PIPE-FLOW(CFS) =    242.65
 *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
 PIPEFLOW TRAVEL TIME(MIN.) =   1.39    Tc(MIN.) =  30.83
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.446
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A       13.85      0.98      0.60    32
 SCHOOL                     A       16.29      0.98      0.60    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       15.89      0.75      0.60    56
 PUBLIC PARK                B        9.87      0.75      0.85    56
 SCHOOL                     B       12.11      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.84
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.64
 SUBAREA AREA(ACRES) =   68.01      SUBAREA RUNOFF(CFS) =   55.71
 EFFECTIVE AREA(ACRES) =    335.36    AREA-AVERAGED Fm(INCH/HR) =  0.49
 AREA-AVERAGED Fp(INCH/HR) =  0.87  AREA-AVERAGED Ap =  0.57
 TOTAL AREA(ACRES) =    371.96        PEAK FLOW RATE(CFS) =    288.62

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.82

 STREET CROSS-SECTION INFORMATION:
 CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 26.00
 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   45.96
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.61
   HALFSTREET FLOOD WIDTH(FEET) =   22.75
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.28
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.63

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    288.62  30.83    1.446  0.87( 0.49) 0.57   335.4 LR020510.0
     2    188.23  52.57    1.050  0.86( 0.49) 0.57   372.0 LR020500.0
```

```
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    288.62  Tc(MIN.) =  30.83
  AREA-AVERAGED Fm(INCH/HR) =  0.49  AREA-AVERAGED Fp(INCH/HR) =  0.87
  AREA-AVERAGED Ap =  0.57  EFFECTIVE AREA(ACRES) =    335.36
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20520.00 = 11206.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020520.0 TO NODE LR020536.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1410.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1395.00
  FLOW LENGTH(FEET) =  1041.51   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  72.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  72.0 INCH PIPE IS  38.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.55
  PIPE-FLOW(CFS) =    288.62
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.00    Tc(MIN.) =  31.82
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.419
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        3.22      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.36      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.88
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    5.58      SUBAREA RUNOFF(CFS) =    4.48
  EFFECTIVE AREA(ACRES) =    340.94    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.87  AREA-AVERAGED Ap =  0.57
  TOTAL AREA(ACRES) =    377.54        PEAK FLOW RATE(CFS) =    288.62
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.82

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 26.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  *NOTE: ESTIMATED PEAK FLOW DEFAULTED TO UPSTREAM PEAK FLOW;
         STREET HYDRAULICS NOT COMPUTED*
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20536.00 = 12247.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020536.0 TO NODE LR020536.0 IS CODE =   1
```



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----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  31.82
  RAINFALL INTENSITY(INCH/HR) =   1.42
  AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.87
  AREA-AVERAGED Ap =  0.57
  EFFECTIVE STREAM AREA(ACRES) =   340.94
  TOTAL STREAM AREA(ACRES) =   377.54
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    288.62

****************************************************************************
  FLOW PROCESS FROM NODE LR020530.0 TO NODE LR020531.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   818.88
  ELEVATION DATA: UPSTREAM(FEET) =   1480.00  DOWNSTREAM(FEET) =   1470.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.549
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.270
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        5.33      0.98      0.60    32   14.55
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =      8.08
  TOTAL AREA(ACRES) =      5.33   PEAK FLOW RATE(CFS) =      8.08

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.82

****************************************************************************
  FLOW PROCESS FROM NODE LR020531.0 TO NODE LR020532.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1470.00  DOWNSTREAM ELEVATION(FEET) = 1465.00
  STREET LENGTH(FEET) =   771.13   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90
```

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  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      20.58
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.53
  HALFSTREET FLOOD WIDTH(FEET) =   19.60
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.45
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.30
 STREET FLOW TRAVEL TIME(MIN.) =   5.25   Tc(MIN.) =  19.80
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.886
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A       21.08      0.98      0.60    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =   21.08      SUBAREA RUNOFF(CFS) =   24.69
 EFFECTIVE AREA(ACRES) =     26.41    AREA-AVERAGED Fm(INCH/HR) =  0.58
 AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =     26.41        PEAK FLOW RATE(CFS) =      30.93

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.82

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.59   HALFSTREET FLOOD WIDTH(FEET) =  22.71
 FLOW VELOCITY(FEET/SEC.) =  2.80   DEPTH*VELOCITY(FT*FT/SEC.) =   1.66
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  771.1 FT WITH ELEVATION-DROP =   5.0 FT, IS   29.4 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20532.00
 LONGEST FLOWPATH FROM NODE  20530.00 TO NODE  20532.00 =  1590.01 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020532.0 TO NODE LR020533.0 IS CODE =  42
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1465.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1455.00
 FLOW LENGTH(FEET) =  1024.14   MANNING'S N =  0.013

 USER SPECIFIED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
 DEPTH OF FLOW IN  33.0 INCH PIPE IS  18.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   9.17
 PIPE-FLOW(CFS) =     30.93
 *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
 PIPEFLOW TRAVEL TIME(MIN.) =   1.86    Tc(MIN.) =  21.67
 LONGEST FLOWPATH FROM NODE  20530.00 TO NODE  20533.00 =  2614.15 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020533.0 TO NODE LR020533.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  21.67
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.787
```



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 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 SCHOOL                     A        1.18      0.98      0.60    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        1.68      0.98      0.60    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =    2.86      SUBAREA RUNOFF(CFS) =    3.09
 EFFECTIVE AREA(ACRES) =     29.27   AREA-AVERAGED Fm(INCH/HR) =  0.58
 AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =     29.27       PEAK FLOW RATE(CFS) =      31.67

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.82

****************************************************************************
 FLOW PROCESS FROM NODE LR020533.0 TO NODE LR020534.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1455.00  DOWNSTREAM ELEVATION(FEET) = 1430.00
 STREET LENGTH(FEET) =  1374.03   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      48.88
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.58
   HALFSTREET FLOOD WIDTH(FEET) =   22.23
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.61
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.69
 STREET FLOW TRAVEL TIME(MIN.) =   4.97   Tc(MIN.) =  26.64
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.579
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        3.88      0.98      0.60    32
 SCHOOL                     A       34.43      0.98      0.60    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =   38.31      SUBAREA RUNOFF(CFS) =   34.27
 EFFECTIVE AREA(ACRES) =     67.58    AREA-AVERAGED Fm(INCH/HR) =  0.59
 AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =     67.58        PEAK FLOW RATE(CFS) =      60.46
```

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  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.82

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.62   HALFSTREET FLOOD WIDTH(FEET) =  24.06
  FLOW VELOCITY(FEET/SEC.) =  4.91   DEPTH*VELOCITY(FT*FT/SEC.) =   3.05
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.81
  PIPE-FLOW(CFS) =     31.67
  PIPEFLOW TRAVEL TIME(MIN.) =   2.12    Tc(MIN.) =  23.78
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.690
  SUBAREA AREA(ACRES) =   38.31      SUBAREA RUNOFF(CFS) =   38.10
  TOTAL AREA(ACRES) =     67.58        PEAK FLOW RATE(CFS) =     67.21

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.82
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   35.54
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.54
    HALFSTREET FLOOD WIDTH(FEET) =   19.78
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.15
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.22
  LONGEST FLOWPATH FROM NODE  20530.00 TO NODE  20534.00 =  3988.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020534.0 TO NODE LR020535.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1430.00  DOWNSTREAM ELEVATION(FEET) = 1396.00
  STREET LENGTH(FEET) =  1929.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      81.32
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.68
    HALFSTREET FLOOD WIDTH(FEET) =   27.11
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.27
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.60
  STREET FLOW TRAVEL TIME(MIN.) =   6.10   Tc(MIN.) =  29.88
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.474
  SUBAREA LOSS RATE DATA(AMC  II):
```



```
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       35.20      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   35.20      SUBAREA RUNOFF(CFS) =   28.15
  EFFECTIVE AREA(ACRES) =    102.78    AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =    102.78        PEAK FLOW RATE(CFS) =      82.20

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.82

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.68   HALFSTREET FLOOD WIDTH(FEET) =  27.23
  FLOW VELOCITY(FEET/SEC.) =  5.28   DEPTH*VELOCITY(FT*FT/SEC.) =   3.62
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.52
  PIPE-FLOW(CFS) =     37.90
  PIPEFLOW TRAVEL TIME(MIN.) =   3.38    Tc(MIN.) =  27.16
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.561
  SUBAREA AREA(ACRES) =   35.20      SUBAREA RUNOFF(CFS) =   30.91
  TOTAL AREA(ACRES) =    102.78        PEAK FLOW RATE(CFS) =     90.25

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.82
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   52.35
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.60
    HALFSTREET FLOOD WIDTH(FEET) =   22.96
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.64
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.78
  LONGEST FLOWPATH FROM NODE  20530.00 TO NODE  20535.00 =  5917.68 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020535.0 TO NODE LR020536.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1396.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1395.00
  FLOW LENGTH(FEET) =  1300.63   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  72.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  72.0 INCH PIPE IS  47.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.58
  PIPE-FLOW(CFS) =     90.25
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   5.06    Tc(MIN.) =  32.22
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.409
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

```
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       12.27      0.98       0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.40      0.75       0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   12.67      SUBAREA RUNOFF(CFS) =    9.44
  EFFECTIVE AREA(ACRES) =    115.45    AREA-AVERAGED Fm(INCH/HR) =  0.58
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =    115.45        PEAK FLOW RATE(CFS) =     90.25
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.82

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 26.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  *NOTE: ESTIMATED PEAK FLOW DEFAULTED TO UPSTREAM PEAK FLOW;
         STREET HYDRAULICS NOT COMPUTED*
  LONGEST FLOWPATH FROM NODE  20530.00 TO NODE  20536.00 =  7218.31 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020536.0 TO NODE LR020536.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  32.22
  RAINFALL INTENSITY(INCH/HR) =   1.41
  AREA-AVERAGED Fm(INCH/HR) =  0.58
  AREA-AVERAGED Fp(INCH/HR) =  0.97
  AREA-AVERAGED Ap =  0.60
  EFFECTIVE STREAM AREA(ACRES) =   115.45
  TOTAL STREAM AREA(ACRES) =   115.45
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     90.25

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    288.62  31.82    1.419  0.87( 0.49) 0.57   340.9 LR020510.0
      1    188.23  53.68    1.037  0.86( 0.49) 0.57   377.5 LR020500.0
      2     90.25  32.22    1.409  0.97( 0.58) 0.60   115.4 LR020530.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.
```



```
  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    378.87  31.82    1.419  0.89( 0.51) 0.58   455.0 LR020510.0
      2    377.05  32.22    1.409  0.89( 0.51) 0.58   457.0 LR020530.0
      3    237.78  53.68    1.037  0.89( 0.51) 0.57   493.0 LR020500.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    378.87    Tc(MIN.) =    31.82
  EFFECTIVE AREA(ACRES) =   454.97   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.89  AREA-AVERAGED Ap =  0.58
  TOTAL AREA(ACRES) =    492.99
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20536.00 = 12247.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020536.0 TO NODE LR020537.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1395.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1394.50
  FLOW LENGTH(FEET) =   877.02   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) = 144.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN 144.0 INCH PIPE IS  79.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.91
  PIPE-FLOW(CFS) =    378.87
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   2.63    Tc(MIN.) =  34.46
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.353
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       13.40      0.75       0.60    56
  SCHOOL                     B        8.54      0.75       0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   21.94      SUBAREA RUNOFF(CFS) =   17.86
  EFFECTIVE AREA(ACRES) =    476.91    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.89  AREA-AVERAGED Ap =  0.58
  TOTAL AREA(ACRES) =    514.93        PEAK FLOW RATE(CFS) =    378.87
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.82

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 26.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
```

```
  *NOTE: ESTIMATED PEAK FLOW DEFAULTED TO UPSTREAM PEAK FLOW;
         STREET HYDRAULICS NOT COMPUTED*
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20537.00 = 13124.98 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020537.0 TO NODE LR020538.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1394.50  DOWNSTREAM(FEET) =  1380.00
  FLOW LENGTH(FEET) =   851.83   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   6.00   GIVEN BOX HEIGHT(FEET) =   4.00
  *GIVEN BOX HEIGHT(FEET) =   4.00   ESTIMATED BOX BASEWIDTH(FEET) =    6.44
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  14.70
  BOX-FLOW(CFS) =    378.87
  BOX-FLOW TRAVEL TIME(MIN.) =   0.97    Tc(MIN.) =  35.42
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20538.00 = 13976.81 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020538.0 TO NODE LR020538.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  35.42
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.331
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        6.57      0.75      0.50    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        9.02      0.75      0.60    56
  COMMERCIAL                 B        6.87      0.75      0.10    56
  PUBLIC PARK                B        0.38      0.75      0.85    56
  SCHOOL                     B        0.45      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.43
  SUBAREA AREA(ACRES) =   23.29      SUBAREA RUNOFF(CFS) =   21.18
  EFFECTIVE AREA(ACRES) =    500.20   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.88  AREA-AVERAGED Ap =  0.57
  TOTAL AREA(ACRES) =    538.22       PEAK FLOW RATE(CFS) =     378.87
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.82

****************************************************************************
  FLOW PROCESS FROM NODE LR020538.0 TO NODE LR020539.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1380.00  DOWNSTREAM(FEET) =  1366.00
  FLOW LENGTH(FEET) =  1281.91   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   7.00   GIVEN BOX HEIGHT(FEET) =   4.00
  *GIVEN BOX HEIGHT(FEET) =   4.00   ESTIMATED BOX BASEWIDTH(FEET) =    7.71
```



```
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  12.29
  BOX-FLOW(CFS) =    378.87
  BOX-FLOW TRAVEL TIME(MIN.) =   1.74    Tc(MIN.) =  37.16
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20539.00 = 15258.72 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020539.0 TO NODE LR020539.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  37.16
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.293
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.02      0.75      0.60    56
  COMMERCIAL                 B        3.73      0.75      0.10    56
  PUBLIC PARK                B        1.42      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.31
  SUBAREA AREA(ACRES) =    5.17      SUBAREA RUNOFF(CFS) =    4.94
  EFFECTIVE AREA(ACRES) =    505.37   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.88  AREA-AVERAGED Ap =  0.57
  TOTAL AREA(ACRES) =    543.39       PEAK FLOW RATE(CFS) =     378.87
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.82

****************************************************************************
  FLOW PROCESS FROM NODE LR020539.0 TO NODE LR020539.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020454.0 TO NODE LR020454.0 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20454.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2780.85    Tc(MIN.) =  52.52
  AREA-AVERAGED Fm(INCH/HR) =  0.56    Ybar = 0.57
  TOTAL AREA(ACRES) =    5435.77
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20454.00 = 33620.61 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020454.0 TO NODE LR020454.0 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2780.85    Tc(MIN.) =  52.52
  AREA-AVERAGED Fm(INCH/HR) =  0.56    Ybar = 0.57
  TOTAL AREA(ACRES) =    5435.77
```

```
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20454.00 = 33620.61 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020454.0 TO NODE LR020454.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020454.0 TO NODE LR020539.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1395.00  DOWNSTREAM(FEET) =   1366.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1483.64   CHANNEL SLOPE =  0.0195
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   6.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   2780.85
  FLOW VELOCITY(FEET/SEC.) =  28.69   FLOW DEPTH(FEET) =   4.58
  TRAVEL TIME(MIN.) =   0.86   Tc(MIN.) =  53.38
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20539.00 = 35104.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020539.0 TO NODE LR020539.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  53.38
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.040
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        2.13      0.75      0.85    56
  SCHOOL                     B        8.75      0.75      0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.67      0.75      0.60    56
  COMMERCIAL                 B        0.11      0.75      0.10    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.07      0.75      0.50    56
  MOBILE HOME PARK           B        4.39      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.54
  SUBAREA AREA(ACRES) =   19.12
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.37;30M= 0.76;1H= 0.99;3H= 1.76;6H= 2.53;24H= 5.59
  S-GRAPH: VALLEY(DEV.)= 50.2%;VALLEY(UNDEV.)/DESERT= 49.8%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.89; LAG(HR) = 0.71; Fm(INCH/HR) = 0.56; Ybar = 0.57
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.77; 30M = 0.77; 1HR = 0.77;
  3HR = 0.96; 6HR = 0.98; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   5454.89
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20539.00 = 35104.25 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0321; Lca/L=0.4,n=.0288; Lca/L=0.5,n=.0265;Lca/L=0.6,n=.0247
  TIME OF PEAK FLOW(HR) = 16.75  RUNOFF VOLUME(AF) =    1127.25
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   2692.78
```



```
  TOTAL AREA(ACRES) =   5454.89       PEAK FLOW RATE(CFS) =    2780.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.63; 6HR = 2.27; 24HR = 4.82

****************************************************************************
  FLOW PROCESS FROM NODE LR020539.0 TO NODE LR020539.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     2780.85    Tc(MIN.) =  53.38
  AREA-AVERAGED Fm(INCH/HR) =  0.56    Ybar = 0.57
  TOTAL AREA(ACRES) =    5454.89
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20539.00 = 35104.25 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    378.87  37.16    1.293  0.88( 0.50) 0.57   505.4 LR020510.0
      2    377.05  37.56    1.285  0.88( 0.50) 0.57   507.4 LR020530.0
      3    239.85  59.00    0.980  0.88( 0.50) 0.57   543.4 LR020500.0
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20539.00 = 15258.72 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.37;30M= 0.75;1H= 0.99;3H= 1.75;6H= 2.51;24H= 5.52
  S-GRAPH: VALLEY(DEV.)= 54.6%;VALLEY(UNDEV.)/DESERT= 45.4%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.89; LAG(HR) = 0.71; Fm(INCH/HR) = 0.55; Ybar = 0.57
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.76; 30M = 0.76; 1HR = 0.76;
  3HR = 0.96; 6HR = 0.98; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   5998.28
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20539.00 = 35104.25 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0321; Lca/L=0.4,n=.0288; Lca/L=0.5,n=.0265;Lca/L=0.6,n=.0247
  TIME OF PEAK FLOW(HR) = 16.75  RUNOFF VOLUME(AF) =    1225.29
  PEAK FLOW RATE(CFS) =    2924.46

****************************************************************************
  FLOW PROCESS FROM NODE LR020539.0 TO NODE LR020539.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020539.0 TO NODE LR020539.0 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20539.DNA
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =   5998.28  TC(MIN.) =     53.38
  AREA-AVERAGED Fm(INCH/HR)=  0.55   Ybar =  0.57
```

PEAK FLOW RATE(CFS) = 2924.46

==
==

END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                          San Bernardino County
                    Transportation/ Flood Control Department

                          Water Resources Division

 ************************* DESCRIPTION OF STUDY *************************
* LR 0206ZZ FILE                                                       *
*  25-YEAR STORM                                                       *
*                                                                      *
 ************************************************************************

  FILE NAME: LR0206ZZ.Z25
  TIME/DATE OF STUDY: 11:26 02/23/2006
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 0.9600

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
```



```
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


************************************************************************
  FLOW PROCESS FROM NODE LR020600.0 TO NODE LR020601.0 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   667.14
  ELEVATION DATA: UPSTREAM(FEET) =   2277.00  DOWNSTREAM(FEET) =   2175.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.086
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.195
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.56      0.75       0.60    56    8.09
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.26      0.75       0.70    56    8.60
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.61       1.00    66   13.86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.71
  SUBAREA RUNOFF(CFS) =     14.73
  TOTAL AREA(ACRES) =      6.12   PEAK FLOW RATE(CFS) =     14.73

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

************************************************************************
  FLOW PROCESS FROM NODE LR020601.0 TO NODE LR020602.0 IS CODE =  54
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2175.00  DOWNSTREAM(FEET) =   2160.00
```

```
  CHANNEL LENGTH THRU SUBAREA(FEET) =   204.73   CHANNEL SLOPE =  0.0733
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     14.73
  FLOW VELOCITY(FEET/SEC.) =   3.61   FLOW DEPTH(FEET) =   0.52
  TRAVEL TIME(MIN.) =   0.95   Tc(MIN.) =   9.03
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20602.00 =   871.87 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020602.0 TO NODE LR020602.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =   9.03
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.990
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        0.68      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.18      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    0.86      SUBAREA RUNOFF(CFS) =    1.92
  EFFECTIVE AREA(ACRES) =      6.98   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =      6.98       PEAK FLOW RATE(CFS) =      15.52

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

****************************************************************************
  FLOW PROCESS FROM NODE LR020602.0 TO NODE LR020603.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2160.00  DOWNSTREAM(FEET) =   2145.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   268.43   CHANNEL SLOPE =  0.0559
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     15.52
  FLOW VELOCITY(FEET/SEC.) =   3.30   FLOW DEPTH(FEET) =   0.56
  TRAVEL TIME(MIN.) =   1.35   Tc(MIN.) =  10.39
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20603.00 =  1140.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020603.0 TO NODE LR020603.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  10.39
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.750
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
```



```
  "2 DWELLINGS/ACRE"         B        1.70      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =    1.70      SUBAREA RUNOFF(CFS) =    3.41
  EFFECTIVE AREA(ACRES) =      8.68   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =      8.68       PEAK FLOW RATE(CFS) =      17.42

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

****************************************************************************
  FLOW PROCESS FROM NODE LR020603.0 TO NODE LR020604.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2145.00  DOWNSTREAM(FEET) =   2135.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   214.72   CHANNEL SLOPE =  0.0466
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     17.42
  FLOW VELOCITY(FEET/SEC.) =   3.23   FLOW DEPTH(FEET) =   0.60
  TRAVEL TIME(MIN.) =   1.11   Tc(MIN.) =  11.50
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20604.00 =  1355.02 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020604.0 TO NODE LR020604.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  11.50
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.587
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.97      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.08      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =    2.05      SUBAREA RUNOFF(CFS) =    3.81
  EFFECTIVE AREA(ACRES) =     10.73   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     10.73       PEAK FLOW RATE(CFS) =      19.96

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

****************************************************************************
  FLOW PROCESS FROM NODE LR020604.0 TO NODE LR020605.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2135.00  DOWNSTREAM(FEET) =   2125.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   174.03   CHANNEL SLOPE =  0.0575
```

```
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     19.96
  FLOW VELOCITY(FEET/SEC.) =   3.61   FLOW DEPTH(FEET) =   0.61
  TRAVEL TIME(MIN.) =   0.80   Tc(MIN.) =  12.30
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20605.00 =  1529.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020605.0 TO NODE LR020605.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  12.30
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.484
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        2.05      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.10      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =    2.15      SUBAREA RUNOFF(CFS) =    3.80
  EFFECTIVE AREA(ACRES) =     12.88   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     12.88       PEAK FLOW RATE(CFS) =      22.77

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

****************************************************************************
  FLOW PROCESS FROM NODE LR020605.0 TO NODE LR020606.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2125.00  DOWNSTREAM(FEET) =   2115.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   235.99   CHANNEL SLOPE =  0.0424
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     22.77
  FLOW VELOCITY(FEET/SEC.) =   3.32   FLOW DEPTH(FEET) =   0.68
  TRAVEL TIME(MIN.) =   1.18   Tc(MIN.) =  13.48
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20606.00 =  1765.04 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020606.0 TO NODE LR020606.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  13.48
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.351
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        3.11      0.75      0.70    56
```



```
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.22      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    3.33      SUBAREA RUNOFF(CFS) =    5.49
  EFFECTIVE AREA(ACRES) =     16.21   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     16.21       PEAK FLOW RATE(CFS) =      26.71

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

****************************************************************************
  FLOW PROCESS FROM NODE LR020606.0 TO NODE LR020607.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2115.00  DOWNSTREAM(FEET) =   2092.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   277.39   CHANNEL SLOPE =  0.0829
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     26.71
  FLOW VELOCITY(FEET/SEC.) =   4.40   FLOW DEPTH(FEET) =   0.64
  TRAVEL TIME(MIN.) =   1.05   Tc(MIN.) =  14.53
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20607.00 =  2042.43 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020607.0 TO NODE LR020607.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  14.53
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.248
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        0.41      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.29      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.66
  SUBAREA AREA(ACRES) =    0.70      SUBAREA RUNOFF(CFS) =    1.11
  EFFECTIVE AREA(ACRES) =     16.91   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     16.91       PEAK FLOW RATE(CFS) =      26.71
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

****************************************************************************
  FLOW PROCESS FROM NODE LR020607.0 TO NODE LR020608.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
```

```
  ELEVATION DATA: UPSTREAM(FEET) =   2092.00  DOWNSTREAM(FEET) =   2080.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   203.75   CHANNEL SLOPE =  0.0589
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     26.71
  FLOW VELOCITY(FEET/SEC.) =   3.90   FLOW DEPTH(FEET) =   0.68
  TRAVEL TIME(MIN.) =   0.87   Tc(MIN.) =  15.41
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20608.00 =  2246.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020608.0 TO NODE LR020608.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  15.41
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.170
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.94      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.31      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.66
  SUBAREA AREA(ACRES) =    5.25      SUBAREA RUNOFF(CFS) =    7.94
  EFFECTIVE AREA(ACRES) =     22.16   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     22.16       PEAK FLOW RATE(CFS) =      33.07

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

****************************************************************************
  FLOW PROCESS FROM NODE LR020608.0 TO NODE LR020609.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2080.00  DOWNSTREAM(FEET) =   2065.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   358.70   CHANNEL SLOPE =  0.0418
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     33.07
  FLOW VELOCITY(FEET/SEC.) =   3.61   FLOW DEPTH(FEET) =   0.78
  TRAVEL TIME(MIN.) =   1.65   Tc(MIN.) =  17.06
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20609.00 =  2604.88 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020609.0 TO NODE LR020609.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.06
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.042
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```



```
  COMMERCIAL                 B        5.77      0.75      0.10    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        7.52      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.91      0.75      0.60    56
  MOBILE HOME PARK           B        1.23      0.75      0.25    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.92      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.46
  SUBAREA AREA(ACRES) =   16.35      SUBAREA RUNOFF(CFS) =   24.98
  EFFECTIVE AREA(ACRES) =     38.51   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.59
  TOTAL AREA(ACRES) =     38.51       PEAK FLOW RATE(CFS) =      55.48

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

****************************************************************************
  FLOW PROCESS FROM NODE LR020609.0 TO NODE LR020610.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2065.00  DOWNSTREAM ELEVATION(FEET) = 2060.00
  STREET LENGTH(FEET) =   360.92   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      59.70
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.64
    HALFSTREET FLOOD WIDTH(FEET) =   25.22
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.44
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.86
  STREET FLOW TRAVEL TIME(MIN.) =   1.36   Tc(MIN.) =  18.42
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.950
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        1.29      0.75      0.50    56
  COMMERCIAL                 B        2.79      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.24      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        0.95      0.75      0.70    56
  MOBILE HOME PARK           B        0.22      0.75      0.25    56
```

```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.33
  SUBAREA AREA(ACRES) =    5.49      SUBAREA RUNOFF(CFS) =    8.43
  EFFECTIVE AREA(ACRES) =     44.00    AREA-AVERAGED Fm(INCH/HR) =  0.42
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.56
  TOTAL AREA(ACRES) =     44.00        PEAK FLOW RATE(CFS) =      60.74

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.65   HALFSTREET FLOOD WIDTH(FEET) =  25.40
  FLOW VELOCITY(FEET/SEC.) =  4.45   DEPTH*VELOCITY(FT*FT/SEC.) =   2.89
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20610.00 =  2965.80 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020610.0 TO NODE LR020611.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2060.00  DOWNSTREAM ELEVATION(FEET) = 2057.00
  STREET LENGTH(FEET) =   352.25   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      71.94
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.74
    HALFSTREET FLOOD WIDTH(FEET) =   29.79
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.89
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.86
  STREET FLOW TRAVEL TIME(MIN.) =   1.51   Tc(MIN.) =  19.92
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.860
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.30      0.75      0.50    56
  COMMERCIAL                 B        1.71      0.75      0.10    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        1.66      0.75      0.40    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.04      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       12.96      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
```



```
  SUBAREA AREA(ACRES) =   17.67      SUBAREA RUNOFF(CFS) =   22.39
  EFFECTIVE AREA(ACRES) =     61.67    AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.57
  TOTAL AREA(ACRES) =     61.67        PEAK FLOW RATE(CFS) =      79.57

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.76   HALFSTREET FLOOD WIDTH(FEET) =  30.95
  FLOW VELOCITY(FEET/SEC.) =  4.00   DEPTH*VELOCITY(FT*FT/SEC.) =   3.04
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  352.2 FT WITH ELEVATION-DROP =   3.0 FT, IS   43.1 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20611.00
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20611.00 =  3318.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020611.0 TO NODE LR020612.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2057.00  DOWNSTREAM ELEVATION(FEET) = 2054.00
  STREET LENGTH(FEET) =   398.28   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     106.64
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.85
    HALFSTREET FLOOD WIDTH(FEET) =   35.59
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.09
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.48
  STREET FLOW TRAVEL TIME(MIN.) =   1.62   Tc(MIN.) =  21.55
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.775
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.48      0.75      0.50    56
  COMMERCIAL                 B        2.00      0.75      0.10    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       37.07      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        6.98      0.75      0.60    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.01      0.75      0.40    56
  NATURAL FAIR COVER
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"OPEN BRUSH"                B        0.36      0.61      1.00    66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.66
SUBAREA AREA(ACRES) =   46.90      SUBAREA RUNOFF(CFS) =   54.12
EFFECTIVE AREA(ACRES) =    108.57    AREA-AVERAGED Fm(INCH/HR) =  0.46
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.61
TOTAL AREA(ACRES) =    108.57        PEAK FLOW RATE(CFS) =     128.95

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.91   HALFSTREET FLOOD WIDTH(FEET) =  38.40
FLOW VELOCITY(FEET/SEC.) =  4.27   DEPTH*VELOCITY(FT*FT/SEC.) =   3.87

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =   5.76
PIPE-FLOW(CFS) =     18.10
PIPEFLOW TRAVEL TIME(MIN.) =   1.15    Tc(MIN.) =  21.08
*  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.798
SUBAREA AREA(ACRES) =   46.90      SUBAREA RUNOFF(CFS) =   55.12
TOTAL AREA(ACRES) =    108.57        PEAK FLOW RATE(CFS) =    131.26

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  113.16
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.87
  HALFSTREET FLOOD WIDTH(FEET) =   36.45
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.15
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.60
LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20612.00 =  3716.33 FEET.

****************************************************************************
FLOW PROCESS FROM NODE LR020612.0 TO NODE LR020613.0 IS CODE =  63
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 2054.00  DOWNSTREAM ELEVATION(FEET) = 2050.00
STREET LENGTH(FEET) =   366.37   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
```



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MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     134.10
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.86
  HALFSTREET FLOOD WIDTH(FEET) =   36.20
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.98
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.30
STREET FLOW TRAVEL TIME(MIN.) =   1.23   Tc(MIN.) =  22.30
*  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.738
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"5-7 DWELLINGS/ACRE"         B        0.53      0.75      0.50    56
COMMERCIAL                   B        2.00      0.75      0.10    56
RESIDENTIAL
"2 DWELLINGS/ACRE"           B        1.58      0.75      0.70    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"         B        0.26      0.75      0.60    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
SUBAREA AREA(ACRES) =    4.37      SUBAREA RUNOFF(CFS) =    5.67
EFFECTIVE AREA(ACRES) =    112.94    AREA-AVERAGED Fm(INCH/HR) =  0.45
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
TOTAL AREA(ACRES) =    112.94        PEAK FLOW RATE(CFS) =     131.26
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.86   HALFSTREET FLOOD WIDTH(FEET) =  35.90
FLOW VELOCITY(FEET/SEC.) =  4.95   DEPTH*VELOCITY(FT*FT/SEC.) =   4.25
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =   6.93
PIPE-FLOW(CFS) =     21.79
PIPEFLOW TRAVEL TIME(MIN.) =   0.88    Tc(MIN.) =  21.96
*  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.755
SUBAREA AREA(ACRES) =    4.37      SUBAREA RUNOFF(CFS) =    5.74
TOTAL AREA(ACRES) =    112.94        PEAK FLOW RATE(CFS) =    132.73

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  110.94
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.81
  HALFSTREET FLOOD WIDTH(FEET) =   33.64
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.75
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.86
LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20613.00 =  4082.70 FEET.

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 FLOW PROCESS FROM NODE LR020613.0 TO NODE LR020614.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2050.00  DOWNSTREAM ELEVATION(FEET) = 2047.00
 STREET LENGTH(FEET) =   389.73   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     136.25
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.92
   HALFSTREET FLOOD WIDTH(FEET) =   39.07
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.36
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.02
 STREET FLOW TRAVEL TIME(MIN.) =   1.49   Tc(MIN.) =  23.45
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.687
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        0.63      0.75      0.50    56
 COMMERCIAL                 B        2.36      0.75      0.10    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.24      0.75      0.60    56
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        2.47      0.75      0.70    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.43
 SUBAREA AREA(ACRES) =    5.70      SUBAREA RUNOFF(CFS) =    7.02
 EFFECTIVE AREA(ACRES) =    118.64    AREA-AVERAGED Fm(INCH/HR) =  0.44
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.59
 TOTAL AREA(ACRES) =    118.64        PEAK FLOW RATE(CFS) =     132.87

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.91   HALFSTREET FLOOD WIDTH(FEET) =  38.71
 FLOW VELOCITY(FEET/SEC.) =  4.33   DEPTH*VELOCITY(FT*FT/SEC.) =   3.96

 *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
        THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
 SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
 ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
 ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
 ASSUME FULL-FLOWING PIPELINE
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 PIPE-FLOW VELOCITY(FEET/SEC.) =   6.29
 PIPE-FLOW(CFS) =     25.05
 PIPEFLOW TRAVEL TIME(MIN.) =   1.03    Tc(MIN.) =  22.99
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.707
 SUBAREA AREA(ACRES) =    5.70      SUBAREA RUNOFF(CFS) =    7.13
 TOTAL AREA(ACRES) =    118.64        PEAK FLOW RATE(CFS) =    135.01

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  109.96
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.86
   HALFSTREET FLOOD WIDTH(FEET) =   35.90
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.15
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.56
 LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20614.00 =  4472.43 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020614.0 TO NODE LR020615.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2047.00  DOWNSTREAM ELEVATION(FEET) = 2044.00
 STREET LENGTH(FEET) =   324.66   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     138.26
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.90
   HALFSTREET FLOOD WIDTH(FEET) =   37.91
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.69
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.21
 STREET FLOW TRAVEL TIME(MIN.) =   1.15   Tc(MIN.) =  24.14
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.658
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        0.61      0.75      0.50    56
 COMMERCIAL                 B        1.87      0.75      0.10    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.40      0.75      0.60    56
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        2.63      0.75      0.70    56
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  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.47
  SUBAREA AREA(ACRES) =    5.51      SUBAREA RUNOFF(CFS) =    6.49
  EFFECTIVE AREA(ACRES) =    124.15    AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.59
  TOTAL AREA(ACRES) =    124.15        PEAK FLOW RATE(CFS) =     136.22

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.89   HALFSTREET FLOOD WIDTH(FEET) =  37.67
  FLOW VELOCITY(FEET/SEC.) =  4.68   DEPTH*VELOCITY(FT*FT/SEC.) =   4.18
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.90
  PIPE-FLOW(CFS) =     27.45
  PIPEFLOW TRAVEL TIME(MIN.) =   0.78    Tc(MIN.) =  23.78
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.673
  SUBAREA AREA(ACRES) =    5.51      SUBAREA RUNOFF(CFS) =    6.56
  TOTAL AREA(ACRES) =    124.15        PEAK FLOW RATE(CFS) =    137.94

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  110.50
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.83
    HALFSTREET FLOOD WIDTH(FEET) =   34.68
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.46
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.72
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20615.00 =  4797.09 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020615.0 TO NODE LR020616.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2044.00  DOWNSTREAM ELEVATION(FEET) = 2042.00
  STREET LENGTH(FEET) =   320.06   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     144.43
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
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    STREET FLOW DEPTH(FEET) =  0.97
    HALFSTREET FLOOD WIDTH(FEET) =   41.70
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.07
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.96
  STREET FLOW TRAVEL TIME(MIN.) =   1.31   Tc(MIN.) =  25.09
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.620
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        2.51      0.75      0.50    56
  COMMERCIAL                 B        0.24      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.23      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        7.57      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
  SUBAREA AREA(ACRES) =   12.55      SUBAREA RUNOFF(CFS) =   12.97
  EFFECTIVE AREA(ACRES) =    136.70    AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.59
  TOTAL AREA(ACRES) =    136.70        PEAK FLOW RATE(CFS) =     144.99

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.98   HALFSTREET FLOOD WIDTH(FEET) =  41.76
  FLOW VELOCITY(FEET/SEC.) =  4.07   DEPTH*VELOCITY(FT*FT/SEC.) =   3.97

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.48
  PIPE-FLOW(CFS) =     38.54
  PIPEFLOW TRAVEL TIME(MIN.) =   0.82    Tc(MIN.) =  24.60
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.639
  SUBAREA AREA(ACRES) =   12.55      SUBAREA RUNOFF(CFS) =   13.19
  TOTAL AREA(ACRES) =    136.70        PEAK FLOW RATE(CFS) =    147.35

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  108.81
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.88
    HALFSTREET FLOOD WIDTH(FEET) =   37.24
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.82
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.38
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20616.00 =  5117.15 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020616.0 TO NODE LR020648.0 IS CODE =  63
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  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
==========================================================================
  UPSTREAM ELEVATION(FEET) = 2042.00  DOWNSTREAM ELEVATION(FEET) = 2025.00
  STREET LENGTH(FEET) =   522.92   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.79

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     151.68
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.75
    HALFSTREET FLOOD WIDTH(FEET) =   30.65
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.77
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.85
  STREET FLOW TRAVEL TIME(MIN.) =   1.12   Tc(MIN.) =  25.72
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.596
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        2.43      0.75      0.50    56
  COMMERCIAL                 B        2.02      0.75      0.10    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        3.04      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.27      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.48
  SUBAREA AREA(ACRES) =    7.76      SUBAREA RUNOFF(CFS) =    8.65
  EFFECTIVE AREA(ACRES) =    144.46    AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.58
  TOTAL AREA(ACRES) =    144.46        PEAK FLOW RATE(CFS) =     150.68

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.75   HALFSTREET FLOOD WIDTH(FEET) =  30.59
  FLOW VELOCITY(FEET/SEC.) =  7.75   DEPTH*VELOCITY(FT*FT/SEC.) =   5.83
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.94
  PIPE-FLOW(CFS) =     51.48
  PIPEFLOW TRAVEL TIME(MIN.) =   0.67    Tc(MIN.) =  25.27
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.613
  SUBAREA AREA(ACRES) =    7.76      SUBAREA RUNOFF(CFS) =    8.77
  TOTAL AREA(ACRES) =    144.46        PEAK FLOW RATE(CFS) =    152.88
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  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  101.40
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.67
    HALFSTREET FLOOD WIDTH(FEET) =   26.25
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.98
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.65
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20648.00 =  5640.07 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020648.0 TO NODE LR020648.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020620.0 TO NODE LR020621.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   866.66
  ELEVATION DATA: UPSTREAM(FEET) =   2190.00  DOWNSTREAM(FEET) =   2160.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.083
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.511
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       11.35      0.61      1.00    66   20.71
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.89      0.75      0.60    56   12.08
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.62
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.97
  SUBAREA RUNOFF(CFS) =     21.03
  TOTAL AREA(ACRES) =     12.24   PEAK FLOW RATE(CFS) =     21.03

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

****************************************************************************
  FLOW PROCESS FROM NODE LR020621.0 TO NODE LR020622.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2160.00  DOWNSTREAM(FEET) =   2150.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   356.13   CHANNEL SLOPE =  0.0281
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  35.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     21.03
  FLOW VELOCITY(FEET/SEC.) =   2.26   FLOW DEPTH(FEET) =   0.52
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  TRAVEL TIME(MIN.) =   2.63   Tc(MIN.) =  14.71
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20622.00 =  1222.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020622.0 TO NODE LR020622.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  14.71
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.231
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.73      0.61      1.00    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.57      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.62      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.66
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.84
  SUBAREA AREA(ACRES) =    6.92      SUBAREA RUNOFF(CFS) =   10.44
  EFFECTIVE AREA(ACRES) =     19.16   AREA-AVERAGED Fm(INCH/HR) =  0.58
  AREA-AVERAGED Fp(INCH/HR) =  0.63  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     19.16       PEAK FLOW RATE(CFS) =      28.39

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

****************************************************************************
  FLOW PROCESS FROM NODE LR020622.0 TO NODE LR020623.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2150.00  DOWNSTREAM(FEET) =   2145.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   158.50   CHANNEL SLOPE =  0.0315
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  35.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     28.39
  FLOW VELOCITY(FEET/SEC.) =   2.52   FLOW DEPTH(FEET) =   0.57
  TRAVEL TIME(MIN.) =   1.05   Tc(MIN.) =  15.76
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20623.00 =  1381.29 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020623.0 TO NODE LR020623.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  15.76
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.141
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        3.20      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.56      0.61      1.00    66
```



```
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        1.58      0.75      0.40    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.74      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.08      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.73
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
  SUBAREA AREA(ACRES) =    8.16      SUBAREA RUNOFF(CFS) =   12.32
  EFFECTIVE AREA(ACRES) =     27.32   AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     27.32       PEAK FLOW RATE(CFS) =      39.16

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

****************************************************************************
  FLOW PROCESS FROM NODE LR020623.0 TO NODE LR020624.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2145.00  DOWNSTREAM(FEET) =   2140.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   251.47   CHANNEL SLOPE =  0.0199
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  35.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     39.16
  FLOW VELOCITY(FEET/SEC.) =   2.30   FLOW DEPTH(FEET) =   0.70
  TRAVEL TIME(MIN.) =   1.82   Tc(MIN.) =  17.58
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20624.00 =  1632.76 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020624.0 TO NODE LR020624.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.58
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.005
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        4.38      0.75      0.40    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.30      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.08      0.75      0.90    56
  CONDOMINIUMS               B        0.14      0.75      0.35    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.55
  SUBAREA AREA(ACRES) =   10.90      SUBAREA RUNOFF(CFS) =   15.66
  EFFECTIVE AREA(ACRES) =     38.22   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.75
  TOTAL AREA(ACRES) =     38.22       PEAK FLOW RATE(CFS) =      51.48

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR020624.0 TO NODE LR020625.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2140.00  DOWNSTREAM(FEET) =   2130.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   332.21   CHANNEL SLOPE =  0.0301
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  35.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     51.48
  FLOW VELOCITY(FEET/SEC.) =   2.88   FLOW DEPTH(FEET) =   0.71
  TRAVEL TIME(MIN.) =   1.92   Tc(MIN.) =  19.50
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20625.00 =  1964.97 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020625.0 TO NODE LR020625.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  19.50
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.884
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.47      0.75      0.60    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.16      0.75      0.40    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.59
  SUBAREA AREA(ACRES) =    5.63      SUBAREA RUNOFF(CFS) =    7.29
  EFFECTIVE AREA(ACRES) =     43.85   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =     43.85       PEAK FLOW RATE(CFS) =      54.61

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

****************************************************************************
  FLOW PROCESS FROM NODE LR020625.0 TO NODE LR020626.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2130.00  DOWNSTREAM ELEVATION(FEET) = 2116.00
  STREET LENGTH(FEET) =   342.35   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.74
```



```
    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      57.79
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.55
    HALFSTREET FLOOD WIDTH(FEET) =   20.39
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.39
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.50
  STREET FLOW TRAVEL TIME(MIN.) =   0.89   Tc(MIN.) =  20.40
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.834
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.09      0.75      0.40    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.68      0.75      0.60    56
  MOBILE HOME PARK           B        0.24      0.75      0.25    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.04      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.58
  SUBAREA AREA(ACRES) =    5.05      SUBAREA RUNOFF(CFS) =    6.36
  EFFECTIVE AREA(ACRES) =     48.90    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.69  AREA-AVERAGED Ap =  0.72
  TOTAL AREA(ACRES) =     48.90        PEAK FLOW RATE(CFS) =      59.00

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.55   HALFSTREET FLOOD WIDTH(FEET) =  20.52
  FLOW VELOCITY(FEET/SEC.) =  6.45   DEPTH*VELOCITY(FT*FT/SEC.) =   3.55
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20626.00 =  2307.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020626.0 TO NODE LR020627.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2116.00  DOWNSTREAM ELEVATION(FEET) = 2110.00
  STREET LENGTH(FEET) =   424.67   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      61.35
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
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```
    STREET FLOW DEPTH(FEET) =  0.65
    HALFSTREET FLOOD WIDTH(FEET) =   25.40
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.50
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.92
  STREET FLOW TRAVEL TIME(MIN.) =   1.57   Tc(MIN.) =  21.97
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.754
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.03      0.75      0.40    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.50      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.53      0.75      0.90    56
  MOBILE HOME PARK           B        0.07      0.75      0.25    56
  COMMERCIAL                 B        0.09      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    4.22      SUBAREA RUNOFF(CFS) =    4.70
  EFFECTIVE AREA(ACRES) =     53.12    AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.69  AREA-AVERAGED Ap =  0.72
  TOTAL AREA(ACRES) =     53.12        PEAK FLOW RATE(CFS) =      60.18

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.64   HALFSTREET FLOOD WIDTH(FEET) =  25.22
  FLOW VELOCITY(FEET/SEC.) =  4.47   DEPTH*VELOCITY(FT*FT/SEC.) =   2.88
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20627.00 =  2731.99 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020627.0 TO NODE LR020628.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2110.00  DOWNSTREAM ELEVATION(FEET) = 2108.00
  STREET LENGTH(FEET) =   486.92   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      63.32
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.79
    HALFSTREET FLOOD WIDTH(FEET) =   32.66
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.87
```



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    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.28
  STREET FLOW TRAVEL TIME(MIN.) =   2.83   Tc(MIN.) =  24.80
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.631
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        1.07      0.75      0.40    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.66      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.65      0.75      0.60    56
  COMMERCIAL                 B        0.68      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.64
  SUBAREA AREA(ACRES) =    6.06      SUBAREA RUNOFF(CFS) =    6.28
  EFFECTIVE AREA(ACRES) =     59.18    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.71
  TOTAL AREA(ACRES) =     59.18        PEAK FLOW RATE(CFS) =      60.58

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.78   HALFSTREET FLOOD WIDTH(FEET) =  32.11
  FLOW VELOCITY(FEET/SEC.) =  2.84   DEPTH*VELOCITY(FT*FT/SEC.) =   2.22
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20628.00 =  3218.91 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020628.0 TO NODE LR020629.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2108.00  DOWNSTREAM ELEVATION(FEET) = 2103.00
  STREET LENGTH(FEET) =   256.63   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      63.34
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.62
    HALFSTREET FLOOD WIDTH(FEET) =   24.18
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.10
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.18
  STREET FLOW TRAVEL TIME(MIN.) =   0.84   Tc(MIN.) =  25.64
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.599
  SUBAREA LOSS RATE DATA(AMC  II):
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 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"8-10 DWELLINGS/ACRE"       B        0.98      0.75       0.40    56
RESIDENTIAL
".4 DWELLING/ACRE"          B        0.92      0.75       0.90    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"        B        3.13      0.75       0.60    56
COMMERCIAL                  B        0.27      0.75       0.10    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.59
SUBAREA AREA(ACRES) =    5.30      SUBAREA RUNOFF(CFS) =    5.52
EFFECTIVE AREA(ACRES) =     64.48    AREA-AVERAGED Fm(INCH/HR) =  0.49
AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.70
TOTAL AREA(ACRES) =     64.48        PEAK FLOW RATE(CFS) =      64.39

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.63   HALFSTREET FLOOD WIDTH(FEET) =  24.30
FLOW VELOCITY(FEET/SEC.) =  5.13   DEPTH*VELOCITY(FT*FT/SEC.) =   3.21
LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20629.00 =  3475.54 FEET.

****************************************************************************
FLOW PROCESS FROM NODE LR020629.0 TO NODE LR020630.0 IS CODE =  63
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 2103.00  DOWNSTREAM ELEVATION(FEET) = 2097.00
STREET LENGTH(FEET) =   278.26   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.89

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      69.04
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.63
  HALFSTREET FLOOD WIDTH(FEET) =   24.48
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.43
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.42
STREET FLOW TRAVEL TIME(MIN.) =   0.85   Tc(MIN.) =  26.49
*  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.568
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
CONDOMINIUMS                B        2.76      0.75       0.35    56
RESIDENTIAL
```



```
"8-10 DWELLINGS/ACRE"       B        0.90      0.75       0.40    56
RESIDENTIAL
".4 DWELLING/ACRE"          B        1.30      0.75       0.90    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"        B        1.80      0.75       0.60    56
COMMERCIAL                  B        1.62      0.75       0.10    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.45
SUBAREA AREA(ACRES) =    8.38      SUBAREA RUNOFF(CFS) =    9.31
EFFECTIVE AREA(ACRES) =     72.86    AREA-AVERAGED Fm(INCH/HR) =  0.47
AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.67
TOTAL AREA(ACRES) =     72.86        PEAK FLOW RATE(CFS) =      71.89

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.64   HALFSTREET FLOOD WIDTH(FEET) =  24.91
FLOW VELOCITY(FEET/SEC.) =  5.47   DEPTH*VELOCITY(FT*FT/SEC.) =   3.49
LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20630.00 =  3753.80 FEET.

****************************************************************************
FLOW PROCESS FROM NODE LR020630.0 TO NODE LR020631.0 IS CODE =  63
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 2097.00  DOWNSTREAM ELEVATION(FEET) = 2088.00
STREET LENGTH(FEET) =   362.66   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.85

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      76.94
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.64
  HALFSTREET FLOOD WIDTH(FEET) =   24.85
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.88
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.75
STREET FLOW TRAVEL TIME(MIN.) =   1.03   Tc(MIN.) =  27.52
*  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.532
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"8-10 DWELLINGS/ACRE"       B        1.22      0.75       0.40    56
CONDOMINIUMS                B        3.44      0.75       0.35    56
RESIDENTIAL
".4 DWELLING/ACRE"          B        0.22      0.75       0.90    56
```

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  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.91      0.75      0.60    56
  COMMERCIAL                 B        1.38      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.41
  SUBAREA AREA(ACRES) =    9.17      SUBAREA RUNOFF(CFS) =   10.11
  EFFECTIVE AREA(ACRES) =     82.03    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.64
  TOTAL AREA(ACRES) =     82.03        PEAK FLOW RATE(CFS) =      79.68

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.64   HALFSTREET FLOOD WIDTH(FEET) =  25.22
  FLOW VELOCITY(FEET/SEC.) =  5.92   DEPTH*VELOCITY(FT*FT/SEC.) =   3.82
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20631.00 =  4116.46 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020631.0 TO NODE LR020632.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2088.00  DOWNSTREAM ELEVATION(FEET) = 2080.00
  STREET LENGTH(FEET) =   271.89   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.81

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      83.32
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.64
    HALFSTREET FLOOD WIDTH(FEET) =   24.79
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.40
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.07
  STREET FLOW TRAVEL TIME(MIN.) =   0.71   Tc(MIN.) =  28.23
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.509
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.65      0.75      0.40    56
  CONDOMINIUMS               B        1.64      0.75      0.35    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.35      0.75      0.60    56
  COMMERCIAL                 B        1.11      0.75      0.10    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.16      0.75      0.90    56
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  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.45
  SUBAREA AREA(ACRES) =    6.91      SUBAREA RUNOFF(CFS) =    7.30
  EFFECTIVE AREA(ACRES) =     88.94    AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.63
  TOTAL AREA(ACRES) =     88.94        PEAK FLOW RATE(CFS) =      85.26

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.64   HALFSTREET FLOOD WIDTH(FEET) =  25.03
  FLOW VELOCITY(FEET/SEC.) =  6.43   DEPTH*VELOCITY(FT*FT/SEC.) =   4.12
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20632.00 =  4388.35 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020632.0 TO NODE LR020633.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2080.00  DOWNSTREAM ELEVATION(FEET) = 2074.00
  STREET LENGTH(FEET) =   252.32   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.86

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      97.56
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.69
    HALFSTREET FLOOD WIDTH(FEET) =   27.47
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.16
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.25
  STREET FLOW TRAVEL TIME(MIN.) =   0.68   Tc(MIN.) =  28.91
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.488
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        4.07      0.75      0.40    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.86      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       20.53      0.75      0.90    56
  COMMERCIAL                 B        1.08      0.75      0.10    56
  MOBILE HOME PARK           B        0.18      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.76
  SUBAREA AREA(ACRES) =   29.72      SUBAREA RUNOFF(CFS) =   24.60
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  EFFECTIVE AREA(ACRES) =    118.66    AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.66
  TOTAL AREA(ACRES) =    118.66        PEAK FLOW RATE(CFS) =     108.14

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.71   HALFSTREET FLOOD WIDTH(FEET) =  28.57
  FLOW VELOCITY(FEET/SEC.) =  6.34   DEPTH*VELOCITY(FT*FT/SEC.) =   4.51
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  252.3 FT WITH ELEVATION-DROP =   6.0 FT, IS   88.4 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20633.00
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20633.00 =  4640.67 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020633.0 TO NODE LR020644.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2074.00  DOWNSTREAM ELEVATION(FEET) = 2068.00
  STREET LENGTH(FEET) =   104.43   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.67

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     108.52
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.62
    HALFSTREET FLOOD WIDTH(FEET) =   24.18
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.74
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.45
  STREET FLOW TRAVEL TIME(MIN.) =   0.20   Tc(MIN.) =  29.11
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.482
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.22      0.75      0.40    56
  COMMERCIAL                 B        0.35      0.75      0.10    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.11      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.33
  SUBAREA AREA(ACRES) =    0.68      SUBAREA RUNOFF(CFS) =    0.76
  EFFECTIVE AREA(ACRES) =    119.34    AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.66
  TOTAL AREA(ACRES) =    119.34        PEAK FLOW RATE(CFS) =     108.25
```



```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.62   HALFSTREET FLOOD WIDTH(FEET) =  24.12
  FLOW VELOCITY(FEET/SEC.) =  8.75   DEPTH*VELOCITY(FT*FT/SEC.) =   5.45
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20644.00 =  4745.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020644.0 TO NODE LR020644.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  29.11
  RAINFALL INTENSITY(INCH/HR) =   1.48
  AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.72
  AREA-AVERAGED Ap =  0.66
  EFFECTIVE STREAM AREA(ACRES) =   119.34
  TOTAL STREAM AREA(ACRES) =   119.34
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    108.25

****************************************************************************
  FLOW PROCESS FROM NODE LR020640.0 TO NODE LR020641.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1072.64
  ELEVATION DATA: UPSTREAM(FEET) =   2182.00  DOWNSTREAM(FEET) =   2120.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.781
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.689
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        7.20      0.75      0.40    56   10.78
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.52      0.61      1.00    66   20.35
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.56
  SUBAREA RUNOFF(CFS) =     20.19
  TOTAL AREA(ACRES) =      9.72   PEAK FLOW RATE(CFS) =     20.19

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

****************************************************************************
  FLOW PROCESS FROM NODE LR020641.0 TO NODE LR020642.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
```

```
 UPSTREAM ELEVATION(FEET) = 2120.00  DOWNSTREAM ELEVATION(FEET) = 2119.00
 STREET LENGTH(FEET) =   375.42   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      21.73
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.61
   HALFSTREET FLOOD WIDTH(FEET) =   23.51
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.84
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.13
 STREET FLOW TRAVEL TIME(MIN.) =   3.39   Tc(MIN.) =  14.17
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.282
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        1.12      0.61      1.00    66
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"      B        0.78      0.75      0.40    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.64
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.75
 SUBAREA AREA(ACRES) =    1.90      SUBAREA RUNOFF(CFS) =    3.07
 EFFECTIVE AREA(ACRES) =     11.62    AREA-AVERAGED Fm(INCH/HR) =  0.40
 AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.59
 TOTAL AREA(ACRES) =     11.62        PEAK FLOW RATE(CFS) =      20.19
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.60   HALFSTREET FLOOD WIDTH(FEET) =  22.84
 FLOW VELOCITY(FEET/SEC.) =  1.81   DEPTH*VELOCITY(FT*FT/SEC.) =   1.08
 LONGEST FLOWPATH FROM NODE  20640.00 TO NODE  20642.00 =  1448.06 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020642.0 TO NODE LR020643.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2119.00  DOWNSTREAM ELEVATION(FEET) = 2100.00
 STREET LENGTH(FEET) =   635.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
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 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.81

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      23.37
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.45
   HALFSTREET FLOOD WIDTH(FEET) =   16.16
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.28
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.92
 STREET FLOW TRAVEL TIME(MIN.) =   2.47   Tc(MIN.) =  16.65
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.072
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"      B        3.99      0.75      0.40    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
 SUBAREA AREA(ACRES) =    3.99      SUBAREA RUNOFF(CFS) =    6.37
 EFFECTIVE AREA(ACRES) =     15.61    AREA-AVERAGED Fm(INCH/HR) =  0.37
 AREA-AVERAGED Fp(INCH/HR) =  0.69  AREA-AVERAGED Ap =  0.54
 TOTAL AREA(ACRES) =     15.61        PEAK FLOW RATE(CFS) =      23.87

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.45   HALFSTREET FLOOD WIDTH(FEET) =  16.32
 FLOW VELOCITY(FEET/SEC.) =  4.29   DEPTH*VELOCITY(FT*FT/SEC.) =   1.94
 LONGEST FLOWPATH FROM NODE  20640.00 TO NODE  20643.00 =  2083.06 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020643.0 TO NODE LR020644.0 IS CODE =  42
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  2100.00
 DOWNSTREAM NODE ELEVATION(FEET) =  2068.00
 FLOW LENGTH(FEET) =   663.17   MANNING'S N =  0.013

 USER SPECIFIED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
 DEPTH OF FLOW IN  48.0 INCH PIPE IS   8.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  14.79
 PIPE-FLOW(CFS) =     23.87
 *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
 PIPEFLOW TRAVEL TIME(MIN.) =   0.75    Tc(MIN.) =  17.39
 LONGEST FLOWPATH FROM NODE  20640.00 TO NODE  20644.00 =  2746.23 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020644.0 TO NODE LR020644.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
```

```
==============================================================================
  MAINLINE Tc(MIN) =  17.39
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.018
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"       B        1.89      0.75      0.40    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.02      0.75      0.60    56
  COMMERCIAL                  B        0.11      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.39
  SUBAREA AREA(ACRES) =    2.02      SUBAREA RUNOFF(CFS) =    3.14
  EFFECTIVE AREA(ACRES) =     17.63   AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.52
  TOTAL AREA(ACRES) =     17.63       PEAK FLOW RATE(CFS) =      26.26

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

******************************************************************************
  FLOW PROCESS FROM NODE LR020644.0 TO NODE LR020644.0 IS CODE =   1
------------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  17.39
  RAINFALL INTENSITY(INCH/HR) =   2.02
  AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.70
  AREA-AVERAGED Ap =  0.52
  EFFECTIVE STREAM AREA(ACRES) =    17.63
  TOTAL STREAM AREA(ACRES) =    17.63
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     26.26

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    108.25  29.11    1.482  0.72( 0.47) 0.66   119.3 LR020620.0
      2     26.26  17.39    2.018  0.70( 0.36) 0.52    17.6 LR020640.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    125.37  17.39    2.018  0.72( 0.45) 0.63    88.9 LR020640.0
      2    126.00  29.11    1.482  0.72( 0.46) 0.64   137.0 LR020620.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    126.00    Tc(MIN.) =    29.11
  EFFECTIVE AREA(ACRES) =   136.97   AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.64
  TOTAL AREA(ACRES) =    136.97
```



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  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20644.00 =  4745.10 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE LR020644.0 TO NODE LR020645.0 IS CODE =  63
------------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
==============================================================================
  UPSTREAM ELEVATION(FEET) = 2068.00  DOWNSTREAM ELEVATION(FEET) = 2059.00
  STREET LENGTH(FEET) =   221.04   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.74

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     134.71
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.70
    HALFSTREET FLOOD WIDTH(FEET) =   28.02
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.19
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.74
  STREET FLOW TRAVEL TIME(MIN.) =   0.45   Tc(MIN.) =  29.56
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.468
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"       B        0.33      0.75      0.40    56
  COMMERCIAL                  B        2.57      0.75      0.10    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"          B        6.71      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        9.85      0.75      0.60    56
  MOBILE HOME PARK            B        0.01      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
  SUBAREA AREA(ACRES) =   19.47      SUBAREA RUNOFF(CFS) =   17.42
  EFFECTIVE AREA(ACRES) =    156.44    AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.64
  TOTAL AREA(ACRES) =    156.44        PEAK FLOW RATE(CFS) =     141.74

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.71   HALFSTREET FLOOD WIDTH(FEET) =  28.57
  FLOW VELOCITY(FEET/SEC.) =  8.31   DEPTH*VELOCITY(FT*FT/SEC.) =   5.91
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
```

```
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.38
  PIPE-FLOW(CFS) =     42.08
  PIPEFLOW TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =  29.38
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.473
  SUBAREA AREA(ACRES) =   19.47      SUBAREA RUNOFF(CFS) =   17.51
  TOTAL AREA(ACRES) =    156.44        PEAK FLOW RATE(CFS) =    142.48

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  100.40
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.64
    HALFSTREET FLOOD WIDTH(FEET) =   25.03
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.57
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.85

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    150.57  17.67    1.999  0.72( 0.46) 0.63   108.4 LR020640.0
      2    142.48  29.38    1.473  0.72( 0.46) 0.64   156.4 LR020620.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    150.57  Tc(MIN.) =  17.67
  AREA-AVERAGED Fm(INCH/HR) =  0.46  AREA-AVERAGED Fp(INCH/HR) =  0.72
  AREA-AVERAGED Ap =  0.63  EFFECTIVE AREA(ACRES) =    108.41
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20645.00 =  4966.14 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020645.0 TO NODE LR020646.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2059.00  DOWNSTREAM ELEVATION(FEET) = 2046.00
  STREET LENGTH(FEET) =   302.67   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.73

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     162.93
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.74
    HALFSTREET FLOOD WIDTH(FEET) =   29.86
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.78
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.47
  STREET FLOW TRAVEL TIME(MIN.) =   0.57   Tc(MIN.) =  18.24
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.961
```



```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"       B        9.08      0.75      0.40    56
  COMMERCIAL                  B        5.79      0.75      0.10    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"        B        0.74      0.75      0.50    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"          B        0.22      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.30
  SUBAREA AREA(ACRES) =   15.83      SUBAREA RUNOFF(CFS) =   24.72
  EFFECTIVE AREA(ACRES) =    124.24    AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =    172.27        PEAK FLOW RATE(CFS) =     151.11

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.72   HALFSTREET FLOOD WIDTH(FEET) =  29.00
  FLOW VELOCITY(FEET/SEC.) =  8.61   DEPTH*VELOCITY(FT*FT/SEC.) =   6.20
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.75
  PIPE-FLOW(CFS) =     43.22
  PIPEFLOW TRAVEL TIME(MIN.) =   0.37    Tc(MIN.) =  18.04
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.975
  SUBAREA AREA(ACRES) =   15.83      SUBAREA RUNOFF(CFS) =   24.91
  TOTAL AREA(ACRES) =    172.27        PEAK FLOW RATE(CFS) =    152.62

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  109.40
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.65
    HALFSTREET FLOOD WIDTH(FEET) =   25.58
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.92
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.16

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    173.10  18.04    1.975  0.72( 0.43) 0.59   124.2 LR020640.0
      2    158.56  29.75    1.462  0.72( 0.44) 0.61   172.3 LR020620.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    173.10  Tc(MIN.) =  18.04
  AREA-AVERAGED Fm(INCH/HR) =  0.43  AREA-AVERAGED Fp(INCH/HR) =  0.72
  AREA-AVERAGED Ap =  0.59  EFFECTIVE AREA(ACRES) =    124.24
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20646.00 =  5268.81 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020646.0 TO NODE LR020647.0 IS CODE =  31
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2046.00  DOWNSTREAM(FEET) =  2030.00
  FLOW LENGTH(FEET) =   325.06   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  29.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  23.97
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    173.10
  PIPE TRAVEL TIME(MIN.) =   0.23    Tc(MIN.) =  18.26
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20647.00 =  5593.87 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020647.0 TO NODE LR020647.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  18.26
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.960
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B       20.06      0.75      0.25    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       29.79      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       14.97      0.75      0.60    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B       13.31      0.75      0.40    56
  COMMERCIAL                 B       16.98      0.75      0.10    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B       17.61      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =  112.72      SUBAREA RUNOFF(CFS) =  160.70
  EFFECTIVE AREA(ACRES) =    236.96   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    284.99       PEAK FLOW RATE(CFS) =     311.67

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    332.15  18.26    1.960  0.73( 0.40) 0.55   237.0 LR020640.0
      2    267.03  29.99    1.456  0.73( 0.41) 0.57   285.0 LR020620.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    332.15  Tc(MIN.) =  18.26
  AREA-AVERAGED Fm(INCH/HR) =  0.40  AREA-AVERAGED Fp(INCH/HR) =  0.73
  AREA-AVERAGED Ap =  0.55  EFFECTIVE AREA(ACRES) =    236.96

****************************************************************************
  FLOW PROCESS FROM NODE LR020647.0 TO NODE LR020648.0 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
```



```
  ELEVATION DATA: UPSTREAM(FEET) =  2030.00  DOWNSTREAM(FEET) =  2025.00
  FLOW LENGTH(FEET) =   149.90   MANNING'S N =  0.013
  DEPTH OF FLOW IN  57.0 INCH PIPE IS  41.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  24.31
  ESTIMATED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    332.15
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =  18.37
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20648.00 =  5743.77 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020648.0 TO NODE LR020648.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  18.37
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.953
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B         0.31      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =    0.31      SUBAREA RUNOFF(CFS) =    0.44
  EFFECTIVE AREA(ACRES) =    237.27   AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.55
  TOTAL AREA(ACRES) =    285.30       PEAK FLOW RATE(CFS) =     332.15
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

****************************************************************************
  FLOW PROCESS FROM NODE LR020648.0 TO NODE LR020648.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    332.15  18.37    1.953  0.73( 0.40) 0.55   237.3 LR020640.0
      2    267.03  30.09    1.452  0.73( 0.41) 0.57   285.3 LR020620.0
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20648.00 =  5743.77 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    152.88  25.27    1.613  0.75( 0.44) 0.58   144.5 LR020600.0
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20648.00 =  5640.07 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    475.42  18.37    1.953  0.74( 0.41) 0.56   342.3 LR020640.0
      2    446.68  25.27    1.613  0.74( 0.42) 0.57   410.0 LR020600.0
      3    399.04  30.09    1.452  0.74( 0.42) 0.57   429.8 LR020620.0
    TOTAL AREA(ACRES) =    429.76
```

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      475.42  Tc(MIN.) =   18.366
  EFFECTIVE AREA(ACRES) =    342.26  AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.56
  TOTAL AREA(ACRES) =    429.76
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20648.00 =  5743.77 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020648.0 TO NODE LR020648.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020648.0 TO NODE LR020655.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2025.00  DOWNSTREAM ELEVATION(FEET) = 2020.00
  STREET LENGTH(FEET) =   623.73   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     480.25
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.42
    HALFSTREET FLOOD WIDTH(FEET) =   63.85
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.84
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    8.27
  STREET FLOW TRAVEL TIME(MIN.) =   1.78   Tc(MIN.) =  20.15
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.848
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        2.58      0.75      0.50    56
  COMMERCIAL                 B        3.03      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.11      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.00      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.08      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.36
  SUBAREA AREA(ACRES) =    6.80      SUBAREA RUNOFF(CFS) =    9.68
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  EFFECTIVE AREA(ACRES) =    349.06    AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.56
  TOTAL AREA(ACRES) =    436.56        PEAK FLOW RATE(CFS) =     475.42
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.41   HALFSTREET FLOOD WIDTH(FEET) =  63.61
  FLOW VELOCITY(FEET/SEC.) =  5.82   DEPTH*VELOCITY(FT*FT/SEC.) =   8.22

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  75.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.70
  PIPE-FLOW(CFS) =    389.89
  PIPEFLOW TRAVEL TIME(MIN.) =   0.82    Tc(MIN.) =  19.18
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.903
  SUBAREA AREA(ACRES) =    6.80      SUBAREA RUNOFF(CFS) =   10.01
  TOTAL AREA(ACRES) =    436.56        PEAK FLOW RATE(CFS) =    475.42
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   85.52
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.78
    HALFSTREET FLOOD WIDTH(FEET) =   32.24
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.98
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.12
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20655.00 =  6367.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020655.0 TO NODE LR020655.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  19.18
  RAINFALL INTENSITY(INCH/HR) =   1.90
  AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.74
  AREA-AVERAGED Ap =  0.56
  EFFECTIVE STREAM AREA(ACRES) =   349.06
  TOTAL STREAM AREA(ACRES) =   436.56
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    475.42

****************************************************************************
  FLOW PROCESS FROM NODE LR020649.0 TO NODE LR020650.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
```

```
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
================================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   545.44
  ELEVATION DATA: UPSTREAM(FEET) =   2195.00  DOWNSTREAM(FEET) =   2170.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.492
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.902
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.54      0.75      0.70    56   10.09
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.61      0.75      0.60    56    9.49
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA RUNOFF(CFS) =     15.42
  TOTAL AREA(ACRES) =      7.15   PEAK FLOW RATE(CFS) =     15.42

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

****************************************************************************
  FLOW PROCESS FROM NODE LR020650.0 TO NODE LR020651.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2170.00  DOWNSTREAM ELEVATION(FEET) = 2130.00
  STREET LENGTH(FEET) =   374.60   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.56

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      24.25
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.38
    HALFSTREET FLOOD WIDTH(FEET) =   12.73
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.98
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.66
  STREET FLOW TRAVEL TIME(MIN.) =   0.89   Tc(MIN.) =  10.39
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.750
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        7.90      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.89      0.75      0.60    56
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  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    8.79      SUBAREA RUNOFF(CFS) =   17.67
  EFFECTIVE AREA(ACRES) =     15.94    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     15.94        PEAK FLOW RATE(CFS) =      32.10

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.41   HALFSTREET FLOOD WIDTH(FEET) =  14.21
  FLOW VELOCITY(FEET/SEC.) =  7.51   DEPTH*VELOCITY(FT*FT/SEC.) =   3.08
  LONGEST FLOWPATH FROM NODE  20649.00 TO NODE  20651.00 =   920.04 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020651.0 TO NODE LR020652.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2130.00  DOWNSTREAM ELEVATION(FEET) = 2080.00
  STREET LENGTH(FEET) =   427.12   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.56

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      39.29
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.43
    HALFSTREET FLOOD WIDTH(FEET) =   15.15
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.14
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.49
  STREET FLOW TRAVEL TIME(MIN.) =   0.87   Tc(MIN.) =  11.26
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.619
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.22      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.35      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    7.57      SUBAREA RUNOFF(CFS) =   14.37
  EFFECTIVE AREA(ACRES) =     23.51    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     23.51        PEAK FLOW RATE(CFS) =      44.61

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
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  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.44   HALFSTREET FLOOD WIDTH(FEET) =  15.93
  FLOW VELOCITY(FEET/SEC.) =  8.40   DEPTH*VELOCITY(FT*FT/SEC.) =   3.74
  LONGEST FLOWPATH FROM NODE  20649.00 TO NODE  20652.00 =  1347.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020652.0 TO NODE LR020653.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2080.00  DOWNSTREAM ELEVATION(FEET) = 2040.00
  STREET LENGTH(FEET) =   432.48   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.60

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      48.49
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.47
    HALFSTREET FLOOD WIDTH(FEET) =   17.26
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.83
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.69
  STREET FLOW TRAVEL TIME(MIN.) =   0.92   Tc(MIN.) =  12.18
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.499
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        3.90      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.45      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    4.35      SUBAREA RUNOFF(CFS) =    7.76
  EFFECTIVE AREA(ACRES) =     27.86    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     27.86        PEAK FLOW RATE(CFS) =      49.82

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.47   HALFSTREET FLOOD WIDTH(FEET) =  17.41
  FLOW VELOCITY(FEET/SEC.) =  7.91   DEPTH*VELOCITY(FT*FT/SEC.) =   3.75
  LONGEST FLOWPATH FROM NODE  20649.00 TO NODE  20653.00 =  1779.64 FEET.

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  FLOW PROCESS FROM NODE LR020653.0 TO NODE LR020654.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2040.00  DOWNSTREAM ELEVATION(FEET) = 2030.00
  STREET LENGTH(FEET) =   283.32   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.77

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      51.93
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.54
    HALFSTREET FLOOD WIDTH(FEET) =   20.15
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.87
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.19
  STREET FLOW TRAVEL TIME(MIN.) =   0.81   Tc(MIN.) =  12.99
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.405
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.22      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.46      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.74      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
  SUBAREA AREA(ACRES) =    2.42      SUBAREA RUNOFF(CFS) =    4.22
  EFFECTIVE AREA(ACRES) =     30.28    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     30.28        PEAK FLOW RATE(CFS) =      51.67

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.54   HALFSTREET FLOOD WIDTH(FEET) =  20.09
  FLOW VELOCITY(FEET/SEC.) =  5.87   DEPTH*VELOCITY(FT*FT/SEC.) =   3.18
  LONGEST FLOWPATH FROM NODE  20649.00 TO NODE  20654.00 =  2062.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020654.0 TO NODE LR020655.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2030.00  DOWNSTREAM ELEVATION(FEET) = 2020.00
```

```
  STREET LENGTH(FEET) =   164.56   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.66

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      52.10
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.51
    HALFSTREET FLOOD WIDTH(FEET) =   18.32
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.00
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.54
  STREET FLOW TRAVEL TIME(MIN.) =   0.39   Tc(MIN.) =  13.38
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.362
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.41      0.75       0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
  SUBAREA AREA(ACRES) =    0.41      SUBAREA RUNOFF(CFS) =    0.84
  EFFECTIVE AREA(ACRES) =     30.69    AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.67
  TOTAL AREA(ACRES) =     30.69        PEAK FLOW RATE(CFS) =      51.67
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.51   HALFSTREET FLOOD WIDTH(FEET) =  18.32
  FLOW VELOCITY(FEET/SEC.) =  6.94   DEPTH*VELOCITY(FT*FT/SEC.) =   3.52
  LONGEST FLOWPATH FROM NODE  20649.00 TO NODE  20655.00 =  2227.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020655.0 TO NODE LR020655.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  13.38
  RAINFALL INTENSITY(INCH/HR) =   2.36
  AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.67
  EFFECTIVE STREAM AREA(ACRES) =    30.69
  TOTAL STREAM AREA(ACRES) =    30.69
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     51.67
```



```
  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    475.42  19.18    1.903  0.74( 0.41) 0.56   349.1 LR020640.0
      1    446.68  26.09    1.582  0.74( 0.42) 0.56   416.8 LR020600.0
      1    399.04  30.91    1.429  0.74( 0.42) 0.57   436.6 LR020620.0
      2     51.67  13.38    2.362  0.75( 0.50) 0.67    30.7 LR020649.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    485.25  13.38    2.362  0.74( 0.42) 0.57   274.1 LR020649.0
      2    514.32  19.18    1.903  0.74( 0.42) 0.56   379.7 LR020640.0
      3    476.68  26.09    1.582  0.74( 0.42) 0.57   447.5 LR020600.0
      4    424.78  30.91    1.429  0.74( 0.43) 0.58   467.2 LR020620.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    514.32    Tc(MIN.) =    19.18
  EFFECTIVE AREA(ACRES) =   379.75   AREA-AVERAGED Fm(INCH/HR) =  0.42
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.56
  TOTAL AREA(ACRES) =    467.25
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20655.00 =  6367.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020655.0 TO NODE LR020656.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2020.00  DOWNSTREAM ELEVATION(FEET) = 2014.00
  STREET LENGTH(FEET) =   238.44   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.85

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     516.82
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.19
    HALFSTREET FLOOD WIDTH(FEET) =   52.44
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.27
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   11.02
  STREET FLOW TRAVEL TIME(MIN.) =   0.43   Tc(MIN.) =  19.61
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.878
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

```
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.66      0.75      0.50    56
  COMMERCIAL                 B        1.28      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.16      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.49      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.44
  SUBAREA AREA(ACRES) =    3.59      SUBAREA RUNOFF(CFS) =    4.99
  EFFECTIVE AREA(ACRES) =    383.34    AREA-AVERAGED Fm(INCH/HR) =  0.42
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.56
  TOTAL AREA(ACRES) =    470.84        PEAK FLOW RATE(CFS) =     514.32
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.19   HALFSTREET FLOOD WIDTH(FEET) =  52.32
  FLOW VELOCITY(FEET/SEC.) =  9.27   DEPTH*VELOCITY(FT*FT/SEC.) =  11.00

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.85
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  63.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.03
  PIPE-FLOW(CFS) =    433.91
  PIPEFLOW TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =  19.38
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.891
  SUBAREA AREA(ACRES) =    3.59      SUBAREA RUNOFF(CFS) =    5.04
  TOTAL AREA(ACRES) =    470.84        PEAK FLOW RATE(CFS) =    514.32
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   80.41
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.64
    HALFSTREET FLOOD WIDTH(FEET) =   25.22
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.98
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.85
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20656.00 =  6605.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020656.0 TO NODE LR020657.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2014.00  DOWNSTREAM ELEVATION(FEET) = 2004.00
  STREET LENGTH(FEET) =   422.05   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00
```



```
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.86

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     540.11
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.22
    HALFSTREET FLOOD WIDTH(FEET) =   53.96
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.16
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   11.17
  STREET FLOW TRAVEL TIME(MIN.) =   0.77   Tc(MIN.) =  20.15
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.848
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.99      0.75      0.50    56
  COMMERCIAL                 B        2.55      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.13      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       35.47      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.65
  SUBAREA AREA(ACRES) =   42.14      SUBAREA RUNOFF(CFS) =   51.58
  EFFECTIVE AREA(ACRES) =    425.48    AREA-AVERAGED Fm(INCH/HR) =  0.42
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.57
  TOTAL AREA(ACRES) =    512.98        PEAK FLOW RATE(CFS) =     545.17

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.22   HALFSTREET FLOOD WIDTH(FEET) =  54.21
  FLOW VELOCITY(FEET/SEC.) =  9.16   DEPTH*VELOCITY(FT*FT/SEC.) =  11.22

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.86
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  66.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.05
  PIPE-FLOW(CFS) =    476.66
  PIPEFLOW TRAVEL TIME(MIN.) =   0.35    Tc(MIN.) =  19.73
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.871
  SUBAREA AREA(ACRES) =   42.14      SUBAREA RUNOFF(CFS) =   52.47
  TOTAL AREA(ACRES) =    512.98        PEAK FLOW RATE(CFS) =    554.11

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
```

```
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   77.45
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.64
    HALFSTREET FLOOD WIDTH(FEET) =   25.16
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.78
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.72

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    540.46  13.93    2.306  0.74( 0.43) 0.58   319.8 LR020649.0
      2    554.11  19.73    1.871  0.74( 0.42) 0.57   425.5 LR020640.0
      3    503.89  26.64    1.563  0.74( 0.43) 0.58   493.2 LR020600.0
      4    455.39  31.40    1.416  0.74( 0.43) 0.58   513.0 LR020620.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    554.11  Tc(MIN.) =  19.73
  AREA-AVERAGED Fm(INCH/HR) =  0.42  AREA-AVERAGED Fp(INCH/HR) =  0.74
  AREA-AVERAGED Ap =  0.57  EFFECTIVE AREA(ACRES) =    425.48
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20657.00 =  7027.99 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020657.0 TO NODE LR020658.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2004.00  DOWNSTREAM ELEVATION(FEET) = 2000.00
  STREET LENGTH(FEET) =   653.95   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     566.38
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.58
    HALFSTREET FLOOD WIDTH(FEET) =   71.91
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.44
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    8.58
  STREET FLOW TRAVEL TIME(MIN.) =   2.00   Tc(MIN.) =  21.74
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.765
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        1.69      0.75      0.50    56
  RESIDENTIAL
```



```
  "2 DWELLINGS/ACRE"         B       14.94      0.75      0.70    56
  COMMERCIAL                 B        1.47      0.75      0.10    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.34      0.61      1.00    66
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.78      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.65
  SUBAREA AREA(ACRES) =   21.22      SUBAREA RUNOFF(CFS) =   24.55
  EFFECTIVE AREA(ACRES) =    446.70    AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.58
  TOTAL AREA(ACRES) =    534.20        PEAK FLOW RATE(CFS) =     554.11
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.56   HALFSTREET FLOOD WIDTH(FEET) =  71.24
  FLOW VELOCITY(FEET/SEC.) =  5.42   DEPTH*VELOCITY(FT*FT/SEC.) =   8.48

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  87.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.25
  PIPE-FLOW(CFS) =    505.97
  PIPEFLOW TRAVEL TIME(MIN.) =   0.89    Tc(MIN.) =  20.62
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.822
  SUBAREA AREA(ACRES) =   21.22      SUBAREA RUNOFF(CFS) =   25.63
  TOTAL AREA(ACRES) =    534.20        PEAK FLOW RATE(CFS) =    561.02

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 4.89
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   55.05
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.71
    HALFSTREET FLOOD WIDTH(FEET) =   28.63
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.21
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.29

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    549.50  14.82    2.222  0.74( 0.43) 0.58   341.1 LR020649.0
      2    561.02  20.62    1.822  0.74( 0.43) 0.58   446.7 LR020640.0
      3    512.14  27.42    1.536  0.74( 0.43) 0.58   514.5 LR020600.0
      4    463.07  32.20    1.395  0.74( 0.43) 0.58   534.2 LR020620.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    561.02  Tc(MIN.) =  20.62
  AREA-AVERAGED Fm(INCH/HR) =  0.43  AREA-AVERAGED Fp(INCH/HR) =  0.74
  AREA-AVERAGED Ap =  0.58  EFFECTIVE AREA(ACRES) =    446.70
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20658.00 =  7681.94 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR020658.0 TO NODE LR020658.0 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20658.dna
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =    534.20  TC(MIN.) =     20.62
  EFFECTIVE AREA(ACRES) =    446.70  AREA-AVERAGED Fm(INCH/HR)=  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.58
  PEAK FLOW RATE(CFS)   =    561.02
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
******************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                         Analysis prepared by:

                         San Bernardino County
                   Transportation/ Flood Control Department

                         Water Resources Division

 ************************ DESCRIPTION OF STUDY *************************
* LR 0207ZZ FILE                                                       *
*  25-YEAR STORM                                                       *
*                                                                      *
 **********************************************************************

  FILE NAME: LR0207ZZ.Z25
  TIME/DATE OF STUDY: 11:26 02/23/2006
==============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 0.9600

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
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 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


******************************************************************************
  FLOW PROCESS FROM NODE LR020700.0 TO NODE LR020701.0 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   906.02
  ELEVATION DATA: UPSTREAM(FEET) =   2180.00  DOWNSTREAM(FEET) =   2130.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.204
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.627
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        5.30      0.61      1.00    66   19.20
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.69      0.75      0.60    56   11.20
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.66
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.81
  SUBAREA RUNOFF(CFS) =     18.80
  TOTAL AREA(ACRES) =      9.99   PEAK FLOW RATE(CFS) =     18.80

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

******************************************************************************
  FLOW PROCESS FROM NODE LR020701.0 TO NODE LR020702.0 IS CODE =  92
------------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
==============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   2130.00
  DOWNSTREAM NODE ELEVATION(FEET) =   2080.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   502.90
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
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 PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
 PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
 MAXIMUM DEPTH(FEET) =   1.00
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.517
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        4.19      0.75      0.60    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        2.38      0.61      1.00    66
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"      B        0.08      0.75      0.40    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.68
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.74
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     24.82
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.10
 AVERAGE FLOW DEPTH(FEET) =   0.50   FLOOD WIDTH(FEET) =   20.70
 "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.83   Tc(MIN.) =  12.03
 SUBAREA AREA(ACRES) =    6.65       SUBAREA RUNOFF(CFS) =   12.04
 EFFECTIVE AREA(ACRES) =   16.64     AREA-AVERAGED Fm(INCH/HR) =   0.52
 AREA-AVERAGED Fp(INCH/HR) =   0.67  AREA-AVERAGED Ap =   0.78
 TOTAL AREA(ACRES) =     16.64         PEAK FLOW RATE(CFS) =      29.84

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

 END OF SUBAREA "V" GUTTER HYDRAULICS:
 DEPTH(FEET) =  0.52   FLOOD WIDTH(FEET) =   23.39
 FLOW VELOCITY(FEET/SEC.) =  10.08   DEPTH*VELOCITY(FT*FT/SEC) =   5.27
 LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20702.00 =  1408.92 FEET.

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 FLOW PROCESS FROM NODE LR020702.0 TO NODE LR020703.0 IS CODE =  92
----------------------------------------------------------------------------
 >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =   2080.00
 DOWNSTREAM NODE ELEVATION(FEET) =   2075.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   222.67
 "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
 PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
 PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
 MAXIMUM DEPTH(FEET) =   1.00
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.433
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        2.10      0.75      0.60    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        3.64      0.61      1.00    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.65
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.85
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     34.70
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.30
 AVERAGE FLOW DEPTH(FEET) =   0.64   FLOOD WIDTH(FEET) =   37.28
 "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.70   Tc(MIN.) =  12.73
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 SUBAREA AREA(ACRES) =    5.74       SUBAREA RUNOFF(CFS) =    9.71
 EFFECTIVE AREA(ACRES) =   22.38     AREA-AVERAGED Fm(INCH/HR) =   0.53
 AREA-AVERAGED Fp(INCH/HR) =   0.66  AREA-AVERAGED Ap =   0.80
 TOTAL AREA(ACRES) =     22.38         PEAK FLOW RATE(CFS) =      38.30

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

 END OF SUBAREA "V" GUTTER HYDRAULICS:
 DEPTH(FEET) =  0.66   FLOOD WIDTH(FEET) =   39.07
 FLOW VELOCITY(FEET/SEC.) =   5.38   DEPTH*VELOCITY(FT*FT/SEC) =   3.53
 LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20703.00 =  1631.59 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020703.0 TO NODE LR020704.0 IS CODE =  92
----------------------------------------------------------------------------
 >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =   2075.00
 DOWNSTREAM NODE ELEVATION(FEET) =   2070.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   175.13
 "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
 PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
 PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
 MAXIMUM DEPTH(FEET) =   1.00
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.379
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.53      0.61      1.00    66
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"      B        0.24      0.75      0.40    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        2.09      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.71
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.66
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     40.76
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.01
 AVERAGE FLOW DEPTH(FEET) =   0.65   FLOOD WIDTH(FEET) =   38.02
 "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.49   Tc(MIN.) =  13.22
 SUBAREA AREA(ACRES) =    2.86       SUBAREA RUNOFF(CFS) =    4.92
 EFFECTIVE AREA(ACRES) =   25.24     AREA-AVERAGED Fm(INCH/HR) =   0.52
 AREA-AVERAGED Fp(INCH/HR) =   0.67  AREA-AVERAGED Ap =   0.79
 TOTAL AREA(ACRES) =     25.24         PEAK FLOW RATE(CFS) =      42.13

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

 END OF SUBAREA "V" GUTTER HYDRAULICS:
 DEPTH(FEET) =  0.65   FLOOD WIDTH(FEET) =   38.62
 FLOW VELOCITY(FEET/SEC.) =   6.04   DEPTH*VELOCITY(FT*FT/SEC) =   3.94
 LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20704.00 =  1806.72 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020704.0 TO NODE LR020705.0 IS CODE =  92
----------------------------------------------------------------------------
 >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
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================================================================================
  UPSTREAM NODE ELEVATION(FEET) =   2070.00
  DOWNSTREAM NODE ELEVATION(FEET) =   2065.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   236.79
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.305
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        4.91      0.75      0.40    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.39      0.75      0.60    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.79      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.72
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.52
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     49.16
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.48
  AVERAGE FLOW DEPTH(FEET) =   0.70   FLOOD WIDTH(FEET) =   44.30
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.72   Tc(MIN.) =  13.94
  SUBAREA AREA(ACRES) =    8.09       SUBAREA RUNOFF(CFS) =   14.06
  EFFECTIVE AREA(ACRES) =   33.33     AREA-AVERAGED Fm(INCH/HR) =   0.49
  AREA-AVERAGED Fp(INCH/HR) =   0.68  AREA-AVERAGED Ap =   0.72
  TOTAL AREA(ACRES) =     33.33         PEAK FLOW RATE(CFS) =      54.49

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.72   FLOOD WIDTH(FEET) =   46.39
  FLOW VELOCITY(FEET/SEC.) =   5.57   DEPTH*VELOCITY(FT*FT/SEC) =   4.00
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20705.00 =  2043.51 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020705.0 TO NODE LR020706.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2065.00  DOWNSTREAM ELEVATION(FEET) = 2060.00
  STREET LENGTH(FEET) =   308.42   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      57.86
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    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.62
    HALFSTREET FLOOD WIDTH(FEET) =   24.18
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.66
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.90
  STREET FLOW TRAVEL TIME(MIN.) =   1.10   Tc(MIN.) =  15.04
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.202
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.14      0.61      1.00    66
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.43      0.75      0.60    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.92      0.75      0.40    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.64
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.84
  SUBAREA AREA(ACRES) =    4.49       SUBAREA RUNOFF(CFS) =    6.74
  EFFECTIVE AREA(ACRES) =     37.82    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =     37.82         PEAK FLOW RATE(CFS) =      58.14

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.62   HALFSTREET FLOOD WIDTH(FEET) =  24.24
  FLOW VELOCITY(FEET/SEC.) =  4.66   DEPTH*VELOCITY(FT*FT/SEC.) =   2.91
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20706.00 =  2351.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020706.0 TO NODE LR020707.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2060.00  DOWNSTREAM ELEVATION(FEET) = 2055.00
  STREET LENGTH(FEET) =   216.66   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      58.79
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.60
    HALFSTREET FLOOD WIDTH(FEET) =   22.78
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.29
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    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.15
  STREET FLOW TRAVEL TIME(MIN.) =   0.68   Tc(MIN.) =  15.73
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.144
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.78      0.75      0.40    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
  SUBAREA AREA(ACRES) =    0.78      SUBAREA RUNOFF(CFS) =    1.29
  EFFECTIVE AREA(ACRES) =     38.60    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =     38.60        PEAK FLOW RATE(CFS) =      58.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.59   HALFSTREET FLOOD WIDTH(FEET) =  22.65
  FLOW VELOCITY(FEET/SEC.) =  5.29   DEPTH*VELOCITY(FT*FT/SEC.) =   3.14
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20707.00 =  2568.59 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020707.0 TO NODE LR020708.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2055.00  DOWNSTREAM ELEVATION(FEET) = 2040.00
  STREET LENGTH(FEET) =   337.91   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.72

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      63.26
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.56
    HALFSTREET FLOOD WIDTH(FEET) =   20.76
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.76
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.76
  STREET FLOW TRAVEL TIME(MIN.) =   0.83   Tc(MIN.) =  16.56
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.078
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.36      0.61      1.00    66
```



```
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.39      0.75      0.70    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        1.58      0.75      0.40    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.65
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.81
  SUBAREA AREA(ACRES) =    7.33      SUBAREA RUNOFF(CFS) =   10.22
  EFFECTIVE AREA(ACRES) =     45.93    AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.74
  TOTAL AREA(ACRES) =     45.93        PEAK FLOW RATE(CFS) =      65.42

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.56   HALFSTREET FLOOD WIDTH(FEET) =  21.01
  FLOW VELOCITY(FEET/SEC.) =  6.85   DEPTH*VELOCITY(FT*FT/SEC.) =   3.83
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20708.00 =  2906.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020708.0 TO NODE LR020709.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2040.00  DOWNSTREAM ELEVATION(FEET) = 2035.00
  STREET LENGTH(FEET) =   377.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      68.63
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.89
    HALFSTREET FLOOD WIDTH(FEET) =   47.81
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.62
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.12
  STREET FLOW TRAVEL TIME(MIN.) =   1.36   Tc(MIN.) =  17.92
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.982
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        0.45      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.33      0.61      1.00    66
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        1.75      0.75      0.40    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        1.06      0.75      0.50    56
```

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  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
  SUBAREA AREA(ACRES) =     4.59      SUBAREA RUNOFF(CFS) =     6.41
  EFFECTIVE AREA(ACRES) =     50.52    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =     50.52        PEAK FLOW RATE(CFS) =      67.86

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.89   HALFSTREET FLOOD WIDTH(FEET) =  47.66
  FLOW VELOCITY(FEET/SEC.) =  4.59   DEPTH*VELOCITY(FT*FT/SEC.) =   4.08
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20709.00 =  3283.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020709.0 TO NODE LR020710.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2035.00  DOWNSTREAM ELEVATION(FEET) = 2030.00
  STREET LENGTH(FEET) =   326.96   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.06

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      70.49
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.88
    HALFSTREET FLOOD WIDTH(FEET) =   46.72
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.92
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.33
  STREET FLOW TRAVEL TIME(MIN.) =   1.11   Tc(MIN.) =  19.03
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.912
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        0.82      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.94      0.61      1.00    66
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        1.18      0.75      0.40    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        1.02      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.70
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
  SUBAREA AREA(ACRES) =     3.96      SUBAREA RUNOFF(CFS) =     5.25
  EFFECTIVE AREA(ACRES) =     54.48    AREA-AVERAGED Fm(INCH/HR) =  0.49
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  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.72
  TOTAL AREA(ACRES) =     54.48        PEAK FLOW RATE(CFS) =      69.93

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.88   HALFSTREET FLOOD WIDTH(FEET) =  46.56
  FLOW VELOCITY(FEET/SEC.) =  4.90   DEPTH*VELOCITY(FT*FT/SEC.) =   4.31
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20710.00 =  3610.46 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020710.0 TO NODE LR020711.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2030.00  DOWNSTREAM ELEVATION(FEET) = 2025.00
  STREET LENGTH(FEET) =   298.59   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.04

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      73.39
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.88
    HALFSTREET FLOOD WIDTH(FEET) =   46.56
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.15
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.52
  STREET FLOW TRAVEL TIME(MIN.) =   0.97   Tc(MIN.) =  19.99
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.856
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.34      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.61      1.00    66
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.27      0.75      0.40    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.92      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.66
  SUBAREA AREA(ACRES) =     5.63      SUBAREA RUNOFF(CFS) =     6.92
  EFFECTIVE AREA(ACRES) =     60.11    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.72
  TOTAL AREA(ACRES) =     60.11        PEAK FLOW RATE(CFS) =      74.10

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
```

```
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.88   HALFSTREET FLOOD WIDTH(FEET) =  46.88
  FLOW VELOCITY(FEET/SEC.) =  5.14   DEPTH*VELOCITY(FT*FT/SEC.) =   4.53
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20711.00 =  3909.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020711.0 TO NODE LR020712.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2025.00  DOWNSTREAM(FEET) =   2020.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   279.66   CHANNEL SLOPE =  0.0179
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     74.10
  FLOW VELOCITY(FEET/SEC.) =   5.88   FLOW DEPTH(FEET) =   1.55
  TRAVEL TIME(MIN.) =   0.79   Tc(MIN.) =  20.79
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20712.00 =  4188.71 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020712.0 TO NODE LR020712.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  20.79
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.813
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.62      0.75      0.70    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.72      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.66
  SUBAREA AREA(ACRES) =    3.34      SUBAREA RUNOFF(CFS) =    3.97
  EFFECTIVE AREA(ACRES) =     63.45   AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.71
  TOTAL AREA(ACRES) =     63.45       PEAK FLOW RATE(CFS) =      75.76

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

****************************************************************************
  FLOW PROCESS FROM NODE LR020712.0 TO NODE LR020713.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2020.00  DOWNSTREAM(FEET) =   2000.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   371.84   CHANNEL SLOPE =  0.0538
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     75.76
  FLOW VELOCITY(FEET/SEC.) =   8.80   FLOW DEPTH(FEET) =   1.17
```



```
  TRAVEL TIME(MIN.) =   0.70   Tc(MIN.) =  21.49
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20713.00 =  4560.55 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020713.0 TO NODE LR020713.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.49
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.778
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.10      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.26      0.61      1.00    66
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        1.09      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.82
  SUBAREA AREA(ACRES) =    6.45      SUBAREA RUNOFF(CFS) =    7.16
  EFFECTIVE AREA(ACRES) =     69.90   AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.72
  TOTAL AREA(ACRES) =     69.90       PEAK FLOW RATE(CFS) =      80.87

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

****************************************************************************
  FLOW PROCESS FROM NODE LR020713.0 TO NODE LR020724.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2000.00  DOWNSTREAM(FEET) =   1960.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   732.38   CHANNEL SLOPE =  0.0546
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     80.87
  FLOW VELOCITY(FEET/SEC.) =   9.01   FLOW DEPTH(FEET) =   1.21
  TRAVEL TIME(MIN.) =   1.36   Tc(MIN.) =  22.85
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20724.00 =  5292.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020724.0 TO NODE LR020724.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  22.85
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.713
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.63      0.61      1.00    66
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        1.94      0.75      0.50    56
```

```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.65
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.79
  SUBAREA AREA(ACRES) =    4.57      SUBAREA RUNOFF(CFS) =    4.94
  EFFECTIVE AREA(ACRES) =     74.47   AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =     74.47       PEAK FLOW RATE(CFS) =      81.78

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

****************************************************************************
  FLOW PROCESS FROM NODE LR020724.0 TO NODE LR020724.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020718.0 TO NODE LR020719.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   714.44
  ELEVATION DATA: UPSTREAM(FEET) =   2125.00  DOWNSTREAM(FEET) =   2040.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.738
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.050
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.21      0.75      0.60    56    8.74
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.38      0.61      1.00    66   14.97
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.85      0.75      0.70    56    9.29
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.71
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.75
  SUBAREA RUNOFF(CFS) =     16.82
  TOTAL AREA(ACRES) =      7.44   PEAK FLOW RATE(CFS) =     16.82

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

****************************************************************************
  FLOW PROCESS FROM NODE LR020719.0 TO NODE LR020719.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.74
  RAINFALL INTENSITY(INCH/HR) =   3.05
  AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.71
  AREA-AVERAGED Ap =  0.75
  EFFECTIVE STREAM AREA(ACRES) =     7.44
```



```
  TOTAL STREAM AREA(ACRES) =     7.44
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.82

****************************************************************************
  FLOW PROCESS FROM NODE LR020718.5 TO NODE LR020719.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   522.86
  ELEVATION DATA: UPSTREAM(FEET) =   2100.00  DOWNSTREAM(FEET) =   2040.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.768
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.273
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.21      0.75      0.60    56    7.77
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.34      0.61      1.00    66   13.31
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.69      0.75      0.70    56    8.26
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.79
  SUBAREA RUNOFF(CFS) =     17.74
  TOTAL AREA(ACRES) =      7.24   PEAK FLOW RATE(CFS) =     17.74

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

****************************************************************************
  FLOW PROCESS FROM NODE LR020719.0 TO NODE LR020719.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   7.77
  RAINFALL INTENSITY(INCH/HR) =   3.27
  AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.69
  AREA-AVERAGED Ap =  0.79
  EFFECTIVE STREAM AREA(ACRES) =     7.24
  TOTAL STREAM AREA(ACRES) =     7.24
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.74

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     16.82   8.74    3.050  0.71( 0.54) 0.75     7.4 LR020718.0
      2     17.74   7.77    3.273  0.69( 0.55) 0.79     7.2 LR020718.5

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.
```

```
 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1     34.02   7.77    3.273  0.70( 0.54) 0.77    13.9 LR020718.5
     2     33.11   8.74    3.050  0.70( 0.54) 0.77    14.7 LR020718.0

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     34.02    Tc(MIN.) =     7.77
 EFFECTIVE AREA(ACRES) =    13.85   AREA-AVERAGED Fm(INCH/HR) =  0.54
 AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.77
 TOTAL AREA(ACRES) =     14.68
 LONGEST FLOWPATH FROM NODE  20718.00 TO NODE  20719.00 =   714.44 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020719.0 TO NODE LR020722.0 IS CODE =  92
----------------------------------------------------------------------------
 >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =   2040.00
 DOWNSTREAM NODE ELEVATION(FEET) =   2015.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   351.50
 "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
 PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
 PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
 MAXIMUM DEPTH(FEET) =   1.00
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.117
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        5.48      0.75      0.70    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     40.42
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.85
 AVERAGE FLOW DEPTH(FEET) =   0.58   FLOOD WIDTH(FEET) =   30.41
 "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.66   Tc(MIN.) =   8.43
 SUBAREA AREA(ACRES) =    5.48       SUBAREA RUNOFF(CFS) =   12.79
 EFFECTIVE AREA(ACRES) =   19.33     AREA-AVERAGED Fm(INCH/HR) =   0.54
 AREA-AVERAGED Fp(INCH/HR) =   0.72  AREA-AVERAGED Ap =   0.75
 TOTAL AREA(ACRES) =     20.16         PEAK FLOW RATE(CFS) =      44.86

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

 END OF SUBAREA "V" GUTTER HYDRAULICS:
 DEPTH(FEET) =  0.60   FLOOD WIDTH(FEET) =   32.05
 FLOW VELOCITY(FEET/SEC.) =   8.97   DEPTH*VELOCITY(FT*FT/SEC) =   5.35
 LONGEST FLOWPATH FROM NODE  20718.00 TO NODE  20722.00 =  1065.94 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020722.0 TO NODE LR020722.0 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.43
```



```
 RAINFALL INTENSITY(INCH/HR) =   3.12
 AREA-AVERAGED Fm(INCH/HR) =  0.54
 AREA-AVERAGED Fp(INCH/HR) =  0.72
 AREA-AVERAGED Ap =  0.75
 EFFECTIVE STREAM AREA(ACRES) =    19.33
 TOTAL STREAM AREA(ACRES) =    20.16
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     44.86

****************************************************************************
 FLOW PROCESS FROM NODE LR020720.0 TO NODE LR020721.0 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  1046.89
 ELEVATION DATA: UPSTREAM(FEET) =   2105.00  DOWNSTREAM(FEET) =   2020.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.682
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.562
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        5.65      0.75      0.70    56   11.68
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
 SUBAREA RUNOFF(CFS) =     10.37
 TOTAL AREA(ACRES) =      5.65   PEAK FLOW RATE(CFS) =     10.37

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

****************************************************************************
 FLOW PROCESS FROM NODE LR020721.0 TO NODE LR020722.0 IS CODE =  92
----------------------------------------------------------------------------
 >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =   2020.00
 DOWNSTREAM NODE ELEVATION(FEET) =   2015.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   115.32
 "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
 PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
 PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
 MAXIMUM DEPTH(FEET) =   1.00
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.525
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        1.32      0.75      0.70    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        4.12      0.61      1.00    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.64
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.93
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     15.10
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.70
 AVERAGE FLOW DEPTH(FEET) =   0.49   FLOOD WIDTH(FEET) =   19.50
```

```
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.29   Tc(MIN.) =  11.97
  SUBAREA AREA(ACRES) =    5.44       SUBAREA RUNOFF(CFS) =    9.47
  EFFECTIVE AREA(ACRES) =   11.09     AREA-AVERAGED Fm(INCH/HR) =   0.56
  AREA-AVERAGED Fp(INCH/HR) =   0.69  AREA-AVERAGED Ap =   0.81
  TOTAL AREA(ACRES) =     11.09         PEAK FLOW RATE(CFS) =      19.64

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.52   FLOOD WIDTH(FEET) =   23.24
  FLOW VELOCITY(FEET/SEC.) =   6.70   DEPTH*VELOCITY(FT*FT/SEC) =   3.50
  LONGEST FLOWPATH FROM NODE  20720.00 TO NODE  20722.00 =  1162.21 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020722.0 TO NODE LR020722.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.97
  RAINFALL INTENSITY(INCH/HR) =   2.53
  AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.69
  AREA-AVERAGED Ap =  0.81
  EFFECTIVE STREAM AREA(ACRES) =    11.09
  TOTAL STREAM AREA(ACRES) =    11.09
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     19.64

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     44.86   8.43    3.117  0.72( 0.54) 0.75    19.3 LR020718.5
      1     43.19   9.40    2.919  0.72( 0.54) 0.75    20.2 LR020718.0
      2     19.64  11.97    2.525  0.69( 0.56) 0.81    11.1 LR020720.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     62.85   8.43    3.117  0.71( 0.54) 0.77    27.1 LR020718.5
      2     61.71   9.40    2.919  0.71( 0.54) 0.77    28.9 LR020718.0
      3     55.69  11.97    2.525  0.70( 0.55) 0.77    31.2 LR020720.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     62.85    Tc(MIN.) =     8.43
  EFFECTIVE AREA(ACRES) =    27.14   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.77
  TOTAL AREA(ACRES) =     31.25
  LONGEST FLOWPATH FROM NODE  20720.00 TO NODE  20722.00 =  1162.21 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020722.0 TO NODE LR020723.0 IS CODE =  92
----------------------------------------------------------------------------
```



```
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   2015.00
  DOWNSTREAM NODE ELEVATION(FEET) =   2000.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   664.99
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.772
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.92      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        5.87      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     74.51
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.10
  AVERAGE FLOW DEPTH(FEET) =   0.77   FLOOD WIDTH(FEET) =   52.21
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   1.82   Tc(MIN.) =  10.25
  SUBAREA AREA(ACRES) =   11.79       SUBAREA RUNOFF(CFS) =   23.38
  EFFECTIVE AREA(ACRES) =   38.93     AREA-AVERAGED Fm(INCH/HR) =   0.55
  AREA-AVERAGED Fp(INCH/HR) =   0.69  AREA-AVERAGED Ap =   0.79
  TOTAL AREA(ACRES) =     43.04         PEAK FLOW RATE(CFS) =      77.81

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.78   FLOOD WIDTH(FEET) =   53.26
  FLOW VELOCITY(FEET/SEC.) =   6.13   DEPTH*VELOCITY(FT*FT/SEC) =   4.76
  LONGEST FLOWPATH FROM NODE  20720.00 TO NODE  20723.00 =  1827.20 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020723.0 TO NODE LR020724.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   2000.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1960.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   791.28
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.551
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        9.77      0.61      1.00    66
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.38      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.62
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.98
```

```
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     86.70
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.65
  AVERAGE FLOW DEPTH(FEET) =   0.72   FLOOD WIDTH(FEET) =   46.99
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   1.52   Tc(MIN.) =  11.77
  SUBAREA AREA(ACRES) =   10.15       SUBAREA RUNOFF(CFS) =   17.77
  EFFECTIVE AREA(ACRES) =   49.08     AREA-AVERAGED Fm(INCH/HR) =   0.56
  AREA-AVERAGED Fp(INCH/HR) =   0.68  AREA-AVERAGED Ap =   0.83
  TOTAL AREA(ACRES) =     53.19         PEAK FLOW RATE(CFS) =      87.83

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.73   FLOOD WIDTH(FEET) =   47.13
  FLOW VELOCITY(FEET/SEC.) =   8.71   DEPTH*VELOCITY(FT*FT/SEC) =   6.32
  LONGEST FLOWPATH FROM NODE  20720.00 TO NODE  20724.00 =  2618.48 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020724.0 TO NODE LR020724.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     87.83  11.77    2.551  0.68( 0.56) 0.83    49.1 LR020718.5
      2     85.38  12.77    2.429  0.68( 0.56) 0.83    50.8 LR020718.0
      3     77.01  15.41    2.170  0.68( 0.56) 0.83    53.2 LR020720.0
  LONGEST FLOWPATH FROM NODE  20720.00 TO NODE  20724.00 =  2618.48 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     81.78  22.85    1.713  0.68( 0.49) 0.73    74.5 LR020700.0
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20724.00 =  5292.93 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    158.88  11.77    2.551  0.68( 0.53) 0.79    87.5 LR020718.5
      2    157.91  12.77    2.429  0.68( 0.53) 0.78    92.4 LR020718.0
      3    152.81  15.41    2.170  0.68( 0.53) 0.78   103.4 LR020720.0
      4    136.91  22.85    1.713  0.68( 0.52) 0.77   127.7 LR020700.0
    TOTAL AREA(ACRES) =    127.66

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      158.88  Tc(MIN.) =   11.772
  EFFECTIVE AREA(ACRES) =     87.46  AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =    127.66
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20724.00 =  5292.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020724.0 TO NODE LR020724.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR020724.0 TO NODE LR020725.0 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1960.00  DOWNSTREAM(FEET) =  1958.00
  FLOW LENGTH(FEET) =    81.40   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  33.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.93
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    158.88
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =  11.85
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20725.00 =  5374.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020725.0 TO NODE LR020725.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020658.0 TO NODE LR020658.0 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20658.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM     Q      Tc      Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS)  (MIN.)  (INCH/HR)       (ACRES)    NODE
      1    549.50  14.82  0.74( 0.43) 0.58   341.1 LR020649.0
      2    561.02  20.62  0.74( 0.43) 0.58   446.7 LR020640.0
      3    512.14  27.42  0.74( 0.43) 0.58   514.5 LR020600.0
      4    463.07  32.20  0.74( 0.43) 0.58   534.2 LR020620.0
    TOTAL AREA(ACRES) =   534.20
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20658.00 =  7681.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020658.0 TO NODE LR020658.0 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM     Q      Tc      Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS)  (MIN.)  (INCH/HR)       (ACRES)    NODE
      1    549.50  14.82  0.74( 0.43) 0.58   341.1 LR020649.0
      2    561.02  20.62  0.74( 0.43) 0.58   446.7 LR020640.0
      3    512.14  27.42  0.74( 0.43) 0.58   514.5 LR020600.0
      4    463.07  32.20  0.74( 0.43) 0.58   534.2 LR020620.0
    TOTAL AREA(ACRES) =    534.20
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20658.00 =  7681.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020658.0 TO NODE LR020658.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
```

```
==========================================================================

**************************************************************************
  FLOW PROCESS FROM NODE LR020658.0 TO NODE LR020725.0 IS CODE =  63
--------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
==========================================================================
  UPSTREAM ELEVATION(FEET) = 2000.00  DOWNSTREAM ELEVATION(FEET) = 1958.00
  STREET LENGTH(FEET) =   941.91   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.72

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     572.04
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.11
    HALFSTREET FLOOD WIDTH(FEET) =   48.72
    AVERAGE FLOW VELOCITY(FEET/SEC.) =   11.87
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   13.23
  STREET FLOW TRAVEL TIME(MIN.) =   1.32   Tc(MIN.) =  21.95
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.755
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        2.46      0.75      0.50    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.48      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       12.20      0.61      1.00    66
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.32      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.65
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.85
  SUBAREA AREA(ACRES) =   20.46      SUBAREA RUNOFF(CFS) =   22.04
  EFFECTIVE AREA(ACRES) =    467.16    AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.59
  TOTAL AREA(ACRES) =    554.66        PEAK FLOW RATE(CFS) =     561.02
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.11   HALFSTREET FLOOD WIDTH(FEET) =  48.35
  FLOW VELOCITY(FEET/SEC.) = 11.82   DEPTH*VELOCITY(FT*FT/SEC.) =  13.08

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
```



```
        THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.72
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  25.81
  PIPE-FLOW(CFS) =    507.13
  PIPEFLOW TRAVEL TIME(MIN.) =   0.61    Tc(MIN.) =  21.23
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.790
  SUBAREA AREA(ACRES) =   20.46      SUBAREA RUNOFF(CFS) =   22.69
  TOTAL AREA(ACRES) =    554.66        PEAK FLOW RATE(CFS) =    571.05

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   63.92
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.56
    HALFSTREET FLOOD WIDTH(FEET) =   20.82
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.80
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.78

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    562.89  15.43    2.169  0.73( 0.44) 0.60   361.5 LR020649.0
      2    571.05  21.23    1.790  0.73( 0.43) 0.59   467.2 LR020640.0
      3    520.47  28.03    1.516  0.73( 0.43) 0.59   534.9 LR020600.0
      4    471.61  32.73    1.381  0.73( 0.44) 0.59   554.7 LR020620.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    571.05  Tc(MIN.) =  21.23
  AREA-AVERAGED Fm(INCH/HR) =  0.43  AREA-AVERAGED Fp(INCH/HR) =  0.73
  AREA-AVERAGED Ap =  0.59  EFFECTIVE AREA(ACRES) =    467.16
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20725.00 =  8623.85 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE LR020725.0 TO NODE LR020725.0 IS CODE =  11
--------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
==========================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    562.89  15.43    2.169  0.73( 0.44) 0.60   361.5 LR020649.0
      2    571.05  21.23    1.790  0.73( 0.43) 0.59   467.2 LR020640.0
      3    520.47  28.03    1.516  0.73( 0.43) 0.59   534.9 LR020600.0
      4    471.61  32.73    1.381  0.73( 0.44) 0.59   554.7 LR020620.0
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20725.00 =  8623.85 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    158.88  11.85    2.541  0.68( 0.53) 0.79    87.5 LR020718.5
      2    157.91  12.84    2.421  0.68( 0.53) 0.78    92.4 LR020718.0
      3    152.81  15.48    2.164  0.68( 0.53) 0.78   103.4 LR020720.0
      4    136.91  22.92    1.710  0.68( 0.52) 0.77   127.7 LR020700.0
```

```
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20725.00 =  5374.33 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    684.18  11.85    2.541  0.72( 0.46) 0.64   365.1 LR020718.5
      2    694.84  12.84    2.421  0.72( 0.46) 0.64   393.5 LR020718.0
      3    715.81  15.43    2.169  0.72( 0.46) 0.64   464.7 LR020649.0
      4    715.78  15.48    2.164  0.72( 0.46) 0.64   465.9 LR020720.0
      5    711.58  21.23    1.790  0.72( 0.45) 0.63   589.3 LR020640.0
      6    695.37  22.92    1.710  0.72( 0.45) 0.63   611.7 LR020700.0
      7    635.00  28.03    1.516  0.72( 0.45) 0.63   662.6 LR020600.0
      8    570.61  32.73    1.381  0.72( 0.45) 0.63   682.3 LR020620.0
    TOTAL AREA(ACRES) =    682.32

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      715.81  Tc(MIN.) =   15.426
  EFFECTIVE AREA(ACRES) =    464.70  AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.64
  TOTAL AREA(ACRES) =    682.32
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20725.00 =  8623.85 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020725.0 TO NODE LR020725.0 IS CODE =  71
----------------------------------------------------------------------------
  >>>>>PEAK FLOW RATE ESTIMATOR CHANGED TO UNIT-HYDROGRAPH METHOD<<<<<
  >>>>>USING TIME-OF-CONCENTRATION OF LONGEST FLOWPATH<<<<<
============================================================================
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.64;6H= 2.29;24H= 4.92
  S-GRAPH: VALLEY(DEV.)= 77.8%;VALLEY(UNDEV.)/DESERT= 22.2%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.35; LAG(HR) = 0.28; Fm(INCH/HR) = 0.45; Ybar = 0.50
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 1.00; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    682.32
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20725.00 =  8623.85 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0329; Lca/L=0.4,n=.0295; Lca/L=0.5,n=.0271;Lca/L=0.6,n=.0253
  TIME OF PEAK FLOW(HR) = 16.33  RUNOFF VOLUME(AF) =     148.18
  UNIT-HYDROGRAPH METHOD PEAK FLOW RATE(CFS) =    845.09
  TOTAL PEAK FLOW RATE(CFS) =    845.09 (SOURCE FLOW INCLUDED)
  RATIONAL METHOD PEAK FLOW RATE(CFS) =    715.81
   (UPSTREAM NODE PEAK FLOW RATE(CFS) =    715.81)
  PEAK FLOW RATE(CFS) USED =    845.09

****************************************************************************
  FLOW PROCESS FROM NODE LR020725.0 TO NODE LR020725.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020725.0 TO NODE LR020726.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
```



```
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1958.00  DOWNSTREAM(FEET) =   1872.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1421.01   CHANNEL SLOPE =  0.0605
  CHANNEL BASE(FEET) =    6.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    845.09
  FLOW VELOCITY(FEET/SEC.) =  32.63   FLOW DEPTH(FEET) =   2.40
  TRAVEL TIME(MIN.) =   0.73   Tc(MIN.) =  21.96
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20726.00 = 10044.86 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020726.0 TO NODE LR020726.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.96
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.755
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        3.96      0.75      0.50    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.31      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       14.46      0.61      1.00    66
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.98      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.65
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.85
  SUBAREA AREA(ACRES) =   23.71
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.64;6H= 2.29;24H= 4.92
  S-GRAPH: VALLEY(DEV.)= 76.5%;VALLEY(UNDEV.)/DESERT= 23.5%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.37; LAG(HR) = 0.29; Fm(INCH/HR) = 0.46; Ybar = 0.50
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 1.00; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    706.03
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20726.00 = 10044.86 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0313; Lca/L=0.4,n=.0280; Lca/L=0.5,n=.0258;Lca/L=0.6,n=.0240
  TIME OF PEAK FLOW(HR) = 16.33  RUNOFF VOLUME(AF) =     152.55
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    845.29
  TOTAL AREA(ACRES) =    706.03       PEAK FLOW RATE(CFS) =     845.29

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

****************************************************************************
  FLOW PROCESS FROM NODE LR020726.0 TO NODE LR020727.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1872.00  DOWNSTREAM(FEET) =   1835.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   760.88   CHANNEL SLOPE =  0.0486
```

```
  CHANNEL BASE(FEET) =    6.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    845.29
  FLOW VELOCITY(FEET/SEC.) =  30.11   FLOW DEPTH(FEET) =   2.54
  TRAVEL TIME(MIN.) =   0.42   Tc(MIN.) =  22.38
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20727.00 = 10805.74 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020727.0 TO NODE LR020727.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  22.38
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.735
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        1.92      0.75      0.50    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.30      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       12.35      0.61      1.00    66
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.34      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.66
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.86
  SUBAREA AREA(ACRES) =   20.91
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.64;6H= 2.29;24H= 4.92
  S-GRAPH: VALLEY(DEV.)= 75.4%;VALLEY(UNDEV.)/DESERT= 24.6%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.37; LAG(HR) = 0.30; Fm(INCH/HR) = 0.46; Ybar = 0.51
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 1.00; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    726.94
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20727.00 = 10805.74 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0304; Lca/L=0.4,n=.0272; Lca/L=0.5,n=.0250;Lca/L=0.6,n=.0233
  TIME OF PEAK FLOW(HR) = 16.33  RUNOFF VOLUME(AF) =     156.30
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    853.32
  TOTAL AREA(ACRES) =    726.94       PEAK FLOW RATE(CFS) =     853.32

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

****************************************************************************
  FLOW PROCESS FROM NODE LR020727.0 TO NODE LR020728.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1835.00  DOWNSTREAM(FEET) =   1820.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   832.56   CHANNEL SLOPE =  0.0180
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   4.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    853.32
```



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  FLOW VELOCITY(FEET/SEC.) =  20.68   FLOW DEPTH(FEET) =   2.96
  TRAVEL TIME(MIN.) =   0.67   Tc(MIN.) =  23.05
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20728.00 = 11638.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020728.0 TO NODE LR020728.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  23.05
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.704
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        3.88      0.75      0.50    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       12.91      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        6.79      0.75      0.60    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.42      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.73
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA AREA(ACRES) =   26.00
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.64;6H= 2.29;24H= 4.92
  S-GRAPH: VALLEY(DEV.)= 76.0%;VALLEY(UNDEV.)/DESERT= 24.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.38; LAG(HR) = 0.31; Fm(INCH/HR) = 0.46; Ybar = 0.51
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    752.94
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20728.00 = 11638.30 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0294; Lca/L=0.4,n=.0263; Lca/L=0.5,n=.0242;Lca/L=0.6,n=.0226
  TIME OF PEAK FLOW(HR) = 16.33  RUNOFF VOLUME(AF) =     161.67
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    860.87
  TOTAL AREA(ACRES) =    752.94       PEAK FLOW RATE(CFS) =     860.87

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

****************************************************************************
  FLOW PROCESS FROM NODE LR020728.0 TO NODE LR020748.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1820.00  DOWNSTREAM(FEET) =   1815.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   259.80   CHANNEL SLOPE =  0.0192
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   4.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    860.87
  FLOW VELOCITY(FEET/SEC.) =  21.25   FLOW DEPTH(FEET) =   2.92
  TRAVEL TIME(MIN.) =   0.20   Tc(MIN.) =  23.25
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20748.00 = 11898.10 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR020748.0 TO NODE LR020748.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  23.25
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.695
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.70      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =    0.70
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.64;6H= 2.29;24H= 4.92
  S-GRAPH: VALLEY(DEV.)= 76.0%;VALLEY(UNDEV.)/DESERT= 24.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.39; LAG(HR) = 0.31; Fm(INCH/HR) = 0.46; Ybar = 0.51
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    753.64
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20748.00 = 11898.10 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0291; Lca/L=0.4,n=.0261; Lca/L=0.5,n=.0240;Lca/L=0.6,n=.0224
  TIME OF PEAK FLOW(HR) = 16.33  RUNOFF VOLUME(AF) =     161.84
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    854.75
  TOTAL AREA(ACRES) =    753.64       PEAK FLOW RATE(CFS) =     860.87
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

****************************************************************************
  FLOW PROCESS FROM NODE LR020748.0 TO NODE LR020748.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =     860.87    Tc(MIN.) =  23.25
  AREA-AVERAGED Fm(INCH/HR) =  0.46   Ybar = 0.51
  TOTAL AREA(ACRES) =     753.64

****************************************************************************
  FLOW PROCESS FROM NODE LR020730.0 TO NODE LR020731.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   428.13
  ELEVATION DATA: UPSTREAM(FEET) =   1955.00  DOWNSTREAM(FEET) =   1935.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.104
```



```
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.191
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.49      0.61      1.00    66   14.71
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        2.96      0.75      0.50    56    8.10
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.68
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA RUNOFF(CFS) =     10.96
  TOTAL AREA(ACRES) =      4.45   PEAK FLOW RATE(CFS) =     10.96

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

****************************************************************************
  FLOW PROCESS FROM NODE LR020731.0 TO NODE LR020732.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1935.00  DOWNSTREAM(FEET) =   1890.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   975.64   CHANNEL SLOPE =  0.0461
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     10.96
  FLOW VELOCITY(FEET/SEC.) =   8.98   FLOW DEPTH(FEET) =   0.33
  TRAVEL TIME(MIN.) =   1.81   Tc(MIN.) =   9.91
  LONGEST FLOWPATH FROM NODE  20730.00 TO NODE  20732.00 =  1403.77 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020732.0 TO NODE LR020732.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =   9.91
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.828
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        5.96      0.61      1.00    66
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        5.56      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.66
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.76
  SUBAREA AREA(ACRES) =   11.52      SUBAREA RUNOFF(CFS) =   24.15
  EFFECTIVE AREA(ACRES) =     15.97   AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =     15.97       PEAK FLOW RATE(CFS) =      33.66

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

****************************************************************************
  FLOW PROCESS FROM NODE LR020732.0 TO NODE LR020733.0 IS CODE =  54
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1890.00  DOWNSTREAM(FEET) =   1845.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   862.28   CHANNEL SLOPE =  0.0522
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     33.66
  FLOW VELOCITY(FEET/SEC.) =  13.20   FLOW DEPTH(FEET) =   0.61
  TRAVEL TIME(MIN.) =   1.09   Tc(MIN.) =  11.00
  LONGEST FLOWPATH FROM NODE  20730.00 TO NODE  20733.00 =  2266.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020733.0 TO NODE LR020733.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  11.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.656
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        0.59      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        7.70      0.61      1.00    66
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"        B        5.46      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.65
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.79
  SUBAREA AREA(ACRES) =   13.75      SUBAREA RUNOFF(CFS) =   26.50
  EFFECTIVE AREA(ACRES) =     29.72   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.76
  TOTAL AREA(ACRES) =     29.72       PEAK FLOW RATE(CFS) =      57.69

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

****************************************************************************
  FLOW PROCESS FROM NODE LR020733.0 TO NODE LR020748.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1845.00  DOWNSTREAM(FEET) =   1815.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   848.95   CHANNEL SLOPE =  0.0353
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     57.69
  FLOW VELOCITY(FEET/SEC.) =  13.45   FLOW DEPTH(FEET) =   0.90
  TRAVEL TIME(MIN.) =   1.05   Tc(MIN.) =  12.05
  LONGEST FLOWPATH FROM NODE  20730.00 TO NODE  20748.00 =  3115.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020748.0 TO NODE LR020748.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```



```
  MAINLINE Tc(MIN) =  12.05
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.515
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B       41.76      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.84      0.75      0.60    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"        B        4.95      0.75      0.50    56
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       17.32      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.70
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.76
  SUBAREA AREA(ACRES) =   64.87      SUBAREA RUNOFF(CFS) =  115.55
  EFFECTIVE AREA(ACRES) =     94.59   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.69  AREA-AVERAGED Ap =  0.76
  TOTAL AREA(ACRES) =     94.59       PEAK FLOW RATE(CFS) =     169.46

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

****************************************************************************
  FLOW PROCESS FROM NODE LR020748.0 TO NODE LR020748.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  12.05
  RAINFALL INTENSITY(INCH/HR) =   2.51
  AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.69
  AREA-AVERAGED Ap =  0.76
  EFFECTIVE STREAM AREA(ACRES) =    94.59
  TOTAL STREAM AREA(ACRES) =    94.59
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    169.46

****************************************************************************
  FLOW PROCESS FROM NODE LR020740.0 TO NODE LR020741.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   714.40
  ELEVATION DATA: UPSTREAM(FEET) =   2095.00  DOWNSTREAM(FEET) =   2070.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.865
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.539
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        7.73      0.75      0.70    56   11.86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
```

```
  SUBAREA RUNOFF(CFS) =     14.02
  TOTAL AREA(ACRES) =      7.73   PEAK FLOW RATE(CFS) =     14.02

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

****************************************************************************
  FLOW PROCESS FROM NODE LR020741.0 TO NODE LR020742.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2070.00  DOWNSTREAM(FEET) =   2035.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   418.24   CHANNEL SLOPE =  0.0837
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     14.02
  FLOW VELOCITY(FEET/SEC.) =   5.67   FLOW DEPTH(FEET) =   0.99
  TRAVEL TIME(MIN.) =   1.23   Tc(MIN.) =  13.09
  LONGEST FLOWPATH FROM NODE  20740.00 TO NODE  20742.00 =  1132.64 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020742.0 TO NODE LR020742.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  13.09
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.393
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.91      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =    4.91      SUBAREA RUNOFF(CFS) =    8.26
  EFFECTIVE AREA(ACRES) =     12.64   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     12.64       PEAK FLOW RATE(CFS) =      21.26

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

****************************************************************************
  FLOW PROCESS FROM NODE LR020742.0 TO NODE LR020743.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2035.00  DOWNSTREAM(FEET) =   2020.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   525.35   CHANNEL SLOPE =  0.0286
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     21.26
  FLOW VELOCITY(FEET/SEC.) =   4.24   FLOW DEPTH(FEET) =   1.42
  TRAVEL TIME(MIN.) =   2.06   Tc(MIN.) =  15.16
  LONGEST FLOWPATH FROM NODE  20740.00 TO NODE  20743.00 =  1657.99 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR020743.0 TO NODE LR020743.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  15.16
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.192
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        7.69      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =    7.69      SUBAREA RUNOFF(CFS) =   11.54
  EFFECTIVE AREA(ACRES) =     20.33   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     20.33       PEAK FLOW RATE(CFS) =      30.52

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

****************************************************************************
  FLOW PROCESS FROM NODE LR020743.0 TO NODE LR020744.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2020.00  DOWNSTREAM(FEET) =   1970.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   496.30   CHANNEL SLOPE =  0.1007
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     30.52
  FLOW VELOCITY(FEET/SEC.) =   7.40   FLOW DEPTH(FEET) =   1.28
  TRAVEL TIME(MIN.) =   1.12   Tc(MIN.) =  16.28
  LONGEST FLOWPATH FROM NODE  20740.00 TO NODE  20744.00 =  2154.29 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020744.0 TO NODE LR020744.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  16.28
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.100
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.02      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =    6.02      SUBAREA RUNOFF(CFS) =    8.54
  EFFECTIVE AREA(ACRES) =     26.35   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     26.35       PEAK FLOW RATE(CFS) =      37.38

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR020744.0 TO NODE LR020745.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1970.00  DOWNSTREAM(FEET) =   1920.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   511.30   CHANNEL SLOPE =  0.0978
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     37.38
  FLOW VELOCITY(FEET/SEC.) =   7.72   FLOW DEPTH(FEET) =   1.39
  TRAVEL TIME(MIN.) =   1.10   Tc(MIN.) =  17.38
  LONGEST FLOWPATH FROM NODE  20740.00 TO NODE  20745.00 =  2665.59 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020745.0 TO NODE LR020745.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.38
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.019
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.61      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.17      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =    6.78      SUBAREA RUNOFF(CFS) =    9.14
  EFFECTIVE AREA(ACRES) =     33.13   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     33.13       PEAK FLOW RATE(CFS) =      44.60

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

****************************************************************************
  FLOW PROCESS FROM NODE LR020745.0 TO NODE LR020746.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1920.00  DOWNSTREAM(FEET) =   1895.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   558.91   CHANNEL SLOPE =  0.0447
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     44.60
  FLOW VELOCITY(FEET/SEC.) =   3.97   FLOW DEPTH(FEET) =   0.86
  TRAVEL TIME(MIN.) =   2.34   Tc(MIN.) =  19.72
  LONGEST FLOWPATH FROM NODE  20740.00 TO NODE  20746.00 =  3224.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020746.0 TO NODE LR020746.0 IS CODE =  81
----------------------------------------------------------------------------
```



```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  19.72
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.871
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.76      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        8.95      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    9.71      SUBAREA RUNOFF(CFS) =   11.83
  EFFECTIVE AREA(ACRES) =     42.84   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     42.84       PEAK FLOW RATE(CFS) =      52.03

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

****************************************************************************
  FLOW PROCESS FROM NODE LR020746.0 TO NODE LR020747.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1895.00  DOWNSTREAM(FEET) =   1840.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   573.14   CHANNEL SLOPE =  0.0960
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     52.03
  FLOW VELOCITY(FEET/SEC.) =   5.55   FLOW DEPTH(FEET) =   0.79
  TRAVEL TIME(MIN.) =   1.72   Tc(MIN.) =  21.45
  LONGEST FLOWPATH FROM NODE  20740.00 TO NODE  20747.00 =  3797.64 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020747.0 TO NODE LR020747.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.45
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.780
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.57      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        9.61      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =   10.18      SUBAREA RUNOFF(CFS) =   11.55
  EFFECTIVE AREA(ACRES) =     53.02   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     53.02       PEAK FLOW RATE(CFS) =      60.04

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
```

```
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

****************************************************************************
  FLOW PROCESS FROM NODE LR020747.0 TO NODE LR020748.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1840.00  DOWNSTREAM(FEET) =   1815.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   752.37   CHANNEL SLOPE =  0.0332
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     60.04
  FLOW VELOCITY(FEET/SEC.) =   3.85   FLOW DEPTH(FEET) =   1.02
  TRAVEL TIME(MIN.) =   3.26   Tc(MIN.) =  24.70
  LONGEST FLOWPATH FROM NODE  20740.00 TO NODE  20748.00 =  4550.01 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020748.0 TO NODE LR020748.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  24.70
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.635
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        8.54      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.23      0.75      0.60    56
  PUBLIC PARK                B        0.78      0.75      0.85    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        1.16      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA AREA(ACRES) =   12.71      SUBAREA RUNOFF(CFS) =   12.94
  EFFECTIVE AREA(ACRES) =     65.73   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     65.73       PEAK FLOW RATE(CFS) =      66.08

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

****************************************************************************
  FLOW PROCESS FROM NODE LR020748.0 TO NODE LR020748.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =  24.70
  RAINFALL INTENSITY(INCH/HR) =   1.64
  AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.69
  EFFECTIVE STREAM AREA(ACRES) =    65.73
```



```
  TOTAL STREAM AREA(ACRES) =    65.73
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     66.08
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1       860.87   23.25      753.64  LR020620.0
     2       169.46   12.05       94.59  LR020730.0
     3        66.08   24.70       65.73  LR020740.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.64;6H= 2.29;24H= 4.94
  S-GRAPH: VALLEY(DEV.)= 76.6%;VALLEY(UNDEV.)/DESERT= 23.4%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.39; LAG(HR) = 0.31; Fm(INCH/HR) = 0.47; Ybar = 0.52
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    913.96
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20748.00 = 11898.10 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0291; Lca/L=0.4,n=.0261; Lca/L=0.5,n=.0240;Lca/L=0.6,n=.0224
  TIME OF PEAK FLOW(HR) = 16.33  RUNOFF VOLUME(AF) =     192.98
  PEAK FLOW RATE(CFS) =   1019.88

****************************************************************************
  FLOW PROCESS FROM NODE LR020748.0 TO NODE LR020749.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1815.00  DOWNSTREAM(FEET) =   1700.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2764.03   CHANNEL SLOPE =  0.0416
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   4.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   1019.88
  FLOW VELOCITY(FEET/SEC.) =  29.40   FLOW DEPTH(FEET) =   2.62
  TRAVEL TIME(MIN.) =   1.57   Tc(MIN.) =  24.82
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20749.00 = 14662.13 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020749.0 TO NODE LR020749.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  24.82
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.630
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       46.16      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        9.13      0.75      0.60    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B       13.04      0.75      0.50    56
  PUBLIC PARK                B       14.63      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
```

```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   82.96
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.64;6H= 2.29;24H= 4.95
  S-GRAPH: VALLEY(DEV.)= 78.6%;VALLEY(UNDEV.)/DESERT= 21.4%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.41; LAG(HR) = 0.33; Fm(INCH/HR) = 0.47; Ybar = 0.52
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    996.92
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20749.00 = 14662.13 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0268; Lca/L=0.4,n=.0240; Lca/L=0.5,n=.0221;Lca/L=0.6,n=.0206
  TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     209.35
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1059.37
  TOTAL AREA(ACRES) =    996.92       PEAK FLOW RATE(CFS) =    1059.37

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

****************************************************************************
  FLOW PROCESS FROM NODE LR020749.0 TO NODE LR020763.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1700.00  DOWNSTREAM(FEET) =   1600.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3167.14   CHANNEL SLOPE =  0.0316
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   4.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   1059.37
  FLOW VELOCITY(FEET/SEC.) =  26.92   FLOW DEPTH(FEET) =   2.87
  TRAVEL TIME(MIN.) =   1.96   Tc(MIN.) =  26.78
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20763.00 = 17829.27 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020763.0 TO NODE LR020763.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  26.78
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.558
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B       17.57      0.75      0.50    56
  COMMERCIAL                 B        0.79      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       11.86      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       51.53      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.64
  SUBAREA AREA(ACRES) =   81.75
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.64;6H= 2.29;24H= 4.95
```



```
  S-GRAPH: VALLEY(DEV.)= 80.2%;VALLEY(UNDEV.)/DESERT= 19.8%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.45; LAG(HR) = 0.36; Fm(INCH/HR) = 0.47; Ybar = 0.52
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.95; 30M = 0.95; 1HR = 0.95;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1078.67
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20763.00 = 17829.27 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0249; Lca/L=0.4,n=.0223; Lca/L=0.5,n=.0205;Lca/L=0.6,n=.0191
  TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     226.58
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1111.41
  TOTAL AREA(ACRES) =   1078.67       PEAK FLOW RATE(CFS) =    1111.41

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

****************************************************************************
  FLOW PROCESS FROM NODE LR020763.0 TO NODE LR020763.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =    1111.41    Tc(MIN.) =  26.78
  AREA-AVERAGED Fm(INCH/HR) =  0.47   Ybar = 0.52
  TOTAL AREA(ACRES) =    1078.67

****************************************************************************
  FLOW PROCESS FROM NODE LR020750.0 TO NODE LR020751.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   910.09
  ELEVATION DATA: UPSTREAM(FEET) =   2180.00  DOWNSTREAM(FEET) =   2150.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.443
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.467
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.98      0.75      0.70    56   13.23
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.60      0.75      0.60    56   12.44
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA RUNOFF(CFS) =     15.18
  TOTAL AREA(ACRES) =      8.58   PEAK FLOW RATE(CFS) =     15.18

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

****************************************************************************
  FLOW PROCESS FROM NODE LR020751.0 TO NODE LR020752.0 IS CODE =  54
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2150.00  DOWNSTREAM(FEET) =   2120.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   482.67   CHANNEL SLOPE =  0.0622
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     15.18
  FLOW VELOCITY(FEET/SEC.) =   5.20   FLOW DEPTH(FEET) =   1.08
  TRAVEL TIME(MIN.) =   1.55   Tc(MIN.) =  13.99
  LONGEST FLOWPATH FROM NODE  20750.00 TO NODE  20752.00 =  1392.76 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020752.0 TO NODE LR020752.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  13.99
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.300
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.44      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.07      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    4.51      SUBAREA RUNOFF(CFS) =    7.24
  EFFECTIVE AREA(ACRES) =     13.09   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     13.09       PEAK FLOW RATE(CFS) =      21.13

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

****************************************************************************
  FLOW PROCESS FROM NODE LR020752.0 TO NODE LR020753.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2120.00  DOWNSTREAM ELEVATION(FEET) = 2100.00
  STREET LENGTH(FEET) =   408.17   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      40.33
    ***STREET FLOWING FULL***
```



```
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.49
    HALFSTREET FLOOD WIDTH(FEET) =   18.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.91
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.89
  STREET FLOW TRAVEL TIME(MIN.) =   1.15   Tc(MIN.) =  15.14
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.193
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.61      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       21.76      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =   25.37      SUBAREA RUNOFF(CFS) =   38.36
  EFFECTIVE AREA(ACRES) =     38.46    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     38.46        PEAK FLOW RATE(CFS) =      58.24

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.54   HALFSTREET FLOOD WIDTH(FEET) =  19.78
  FLOW VELOCITY(FEET/SEC.) =  6.80   DEPTH*VELOCITY(FT*FT/SEC.) =   3.64
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  408.2 FT WITH ELEVATION-DROP =  20.0 FT, IS   59.9 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20753.00
  LONGEST FLOWPATH FROM NODE  20750.00 TO NODE  20753.00 =  1800.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020753.0 TO NODE LR020754.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2100.00  DOWNSTREAM ELEVATION(FEET) = 2060.00
  STREET LENGTH(FEET) =   602.59   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.65

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      66.69
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.53
    HALFSTREET FLOOD WIDTH(FEET) =   19.66
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.88
```

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    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.20
  STREET FLOW TRAVEL TIME(MIN.) =   1.27   Tc(MIN.) =  16.42
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.089
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        9.79      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.89      0.75      0.60    56
  SCHOOL                     B        0.21      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   11.89      SUBAREA RUNOFF(CFS) =   16.90
  EFFECTIVE AREA(ACRES) =     50.35    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     50.35        PEAK FLOW RATE(CFS) =      71.54

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.54   HALFSTREET FLOOD WIDTH(FEET) =  20.15
  FLOW VELOCITY(FEET/SEC.) =  8.08   DEPTH*VELOCITY(FT*FT/SEC.) =   4.39
  LONGEST FLOWPATH FROM NODE  20750.00 TO NODE  20754.00 =  2403.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020754.0 TO NODE LR020755.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2060.00  DOWNSTREAM ELEVATION(FEET) = 2040.00
  STREET LENGTH(FEET) =   704.58   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.82

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      98.29
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.67
    HALFSTREET FLOOD WIDTH(FEET) =   26.62
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.59
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.43
  STREET FLOW TRAVEL TIME(MIN.) =   1.78   Tc(MIN.) =  18.20
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.964
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
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  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       31.15      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        6.15      0.75      0.60    56
  SCHOOL                     B        3.45      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   40.75      SUBAREA RUNOFF(CFS) =   53.48
  EFFECTIVE AREA(ACRES) =     91.10    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     91.10        PEAK FLOW RATE(CFS) =     119.35

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.71   HALFSTREET FLOOD WIDTH(FEET) =  28.70
  FLOW VELOCITY(FEET/SEC.) =  6.94   DEPTH*VELOCITY(FT*FT/SEC.) =   4.95
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  704.6 FT WITH ELEVATION-DROP =  20.0 FT, IS   75.9 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20755.00
  LONGEST FLOWPATH FROM NODE  20750.00 TO NODE  20755.00 =  3108.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020755.0 TO NODE LR020756.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2040.00  DOWNSTREAM ELEVATION(FEET) = 2000.00
  STREET LENGTH(FEET) =   785.85   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.69

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     126.53
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.66
    HALFSTREET FLOOD WIDTH(FEET) =   26.19
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.75
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.81
  STREET FLOW TRAVEL TIME(MIN.) =   1.50   Tc(MIN.) =  19.69
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.873
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        9.12      0.75      0.70    56
  RESIDENTIAL
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"3-4 DWELLINGS/ACRE"       B        2.57      0.75      0.60    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
SUBAREA AREA(ACRES) =   11.69      SUBAREA RUNOFF(CFS) =   14.37
EFFECTIVE AREA(ACRES) =    102.79    AREA-AVERAGED Fm(INCH/HR) =  0.51
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
TOTAL AREA(ACRES) =    102.79        PEAK FLOW RATE(CFS) =     126.26

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.66   HALFSTREET FLOOD WIDTH(FEET) =  26.19
FLOW VELOCITY(FEET/SEC.) =  8.74   DEPTH*VELOCITY(FT*FT/SEC.) =   5.80
LONGEST FLOWPATH FROM NODE  20750.00 TO NODE  20756.00 =  3893.95 FEET.

****************************************************************************
FLOW PROCESS FROM NODE LR020756.0 TO NODE LR020757.0 IS CODE =  63
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 2000.00  DOWNSTREAM ELEVATION(FEET) = 1950.00
STREET LENGTH(FEET) =   840.67   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.67

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     132.44
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.66
  HALFSTREET FLOOD WIDTH(FEET) =   25.89
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.37
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.16
STREET FLOW TRAVEL TIME(MIN.) =   1.50   Tc(MIN.) =  21.19
*  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.793
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"2 DWELLINGS/ACRE"         B        8.65      0.75      0.70    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        2.04      0.75      0.60    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
SUBAREA AREA(ACRES) =   10.69      SUBAREA RUNOFF(CFS) =   12.35
EFFECTIVE AREA(ACRES) =    113.48    AREA-AVERAGED Fm(INCH/HR) =  0.51
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
TOTAL AREA(ACRES) =    113.48        PEAK FLOW RATE(CFS) =     131.16
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SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.66   HALFSTREET FLOOD WIDTH(FEET) =  25.77
FLOW VELOCITY(FEET/SEC.) =  9.36   DEPTH*VELOCITY(FT*FT/SEC.) =   6.14
LONGEST FLOWPATH FROM NODE  20750.00 TO NODE  20757.00 =  4734.62 FEET.

****************************************************************************
FLOW PROCESS FROM NODE LR020757.0 TO NODE LR020758.0 IS CODE =  63
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 1950.00  DOWNSTREAM ELEVATION(FEET) = 1920.00
STREET LENGTH(FEET) =   946.77   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.79

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     164.53
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.78
  HALFSTREET FLOOD WIDTH(FEET) =   31.81
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.85
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.09
STREET FLOW TRAVEL TIME(MIN.) =   2.01   Tc(MIN.) =  23.20
*  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.698
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"2 DWELLINGS/ACRE"         B       50.96      0.75      0.70    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B       11.45      0.75      0.60    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
SUBAREA AREA(ACRES) =   62.41      SUBAREA RUNOFF(CFS) =   66.72
EFFECTIVE AREA(ACRES) =    175.89    AREA-AVERAGED Fm(INCH/HR) =  0.51
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
TOTAL AREA(ACRES) =    175.89        PEAK FLOW RATE(CFS) =     188.19

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.81   HALFSTREET FLOOD WIDTH(FEET) =  33.58
FLOW VELOCITY(FEET/SEC.) =  8.08   DEPTH*VELOCITY(FT*FT/SEC.) =   6.56
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  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.79
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.81
  PIPE-FLOW(CFS) =     37.12
  PIPEFLOW TRAVEL TIME(MIN.) =   1.34    Tc(MIN.) =  22.52
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.728
  SUBAREA AREA(ACRES) =   62.41      SUBAREA RUNOFF(CFS) =   68.43
  TOTAL AREA(ACRES) =    175.89        PEAK FLOW RATE(CFS) =    192.99

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  155.87
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.76
    HALFSTREET FLOOD WIDTH(FEET) =   31.14
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.75
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.91
  LONGEST FLOWPATH FROM NODE  20750.00 TO NODE  20758.00 =  5681.39 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020758.0 TO NODE LR020759.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1920.00  DOWNSTREAM ELEVATION(FEET) = 1875.00
  STREET LENGTH(FEET) =  1200.03   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.76

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     203.95
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.81
    HALFSTREET FLOOD WIDTH(FEET) =   33.52
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.79
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.12
  STREET FLOW TRAVEL TIME(MIN.) =   2.28   Tc(MIN.) =  24.80
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.631
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
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  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       18.41      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.34      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   21.75      SUBAREA RUNOFF(CFS) =   21.91
  EFFECTIVE AREA(ACRES) =    197.64    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    197.64        PEAK FLOW RATE(CFS) =     199.55

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.80   HALFSTREET FLOOD WIDTH(FEET) =  33.21
  FLOW VELOCITY(FEET/SEC.) =  8.76   DEPTH*VELOCITY(FT*FT/SEC.) =   7.04

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.76
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.84
  PIPE-FLOW(CFS) =     40.38
  PIPEFLOW TRAVEL TIME(MIN.) =   1.56    Tc(MIN.) =  24.08
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.660
  SUBAREA AREA(ACRES) =   21.75      SUBAREA RUNOFF(CFS) =   22.47
  TOTAL AREA(ACRES) =    197.64        PEAK FLOW RATE(CFS) =    204.71

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  164.33
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.76
    HALFSTREET FLOOD WIDTH(FEET) =   30.77
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.35
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.31
  LONGEST FLOWPATH FROM NODE  20750.00 TO NODE  20759.00 =  6881.42 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020759.0 TO NODE LR020760.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1875.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1845.00
  FLOW LENGTH(FEET) =  1440.55   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  57.0 INCH PIPE IS  32.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.51
  PIPE-FLOW(CFS) =    204.71
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
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  PIPEFLOW TRAVEL TIME(MIN.) =   1.23    Tc(MIN.) =  25.31
  LONGEST FLOWPATH FROM NODE  20750.00 TO NODE  20760.00 =  8321.97 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020760.0 TO NODE LR020760.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  25.31
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.611
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       47.33      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        8.18      0.75      0.60    56
  PUBLIC PARK                B        1.84      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =   57.35      SUBAREA RUNOFF(CFS) =   56.51
  EFFECTIVE AREA(ACRES) =    254.99   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    254.99       PEAK FLOW RATE(CFS) =     252.52

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

****************************************************************************
  FLOW PROCESS FROM NODE LR020760.0 TO NODE LR020761.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1845.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1770.00
  FLOW LENGTH(FEET) =  1840.39   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  57.0 INCH PIPE IS  30.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  26.50
  PIPE-FLOW(CFS) =    252.52
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.16    Tc(MIN.) =  26.47
  LONGEST FLOWPATH FROM NODE  20750.00 TO NODE  20761.00 = 10162.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020761.0 TO NODE LR020761.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  26.47
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.569
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       56.58      0.75      0.70    56
```



```
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       12.66      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   69.24      SUBAREA RUNOFF(CFS) =   65.97
  EFFECTIVE AREA(ACRES) =    324.23   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    324.23       PEAK FLOW RATE(CFS) =     308.70

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

****************************************************************************
  FLOW PROCESS FROM NODE LR020761.0 TO NODE LR020762.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1770.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1740.00
  FLOW LENGTH(FEET) =  1572.80   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  42.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.59
  PIPE-FLOW(CFS) =    308.70
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.37    Tc(MIN.) =  27.84
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.522
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        7.27      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       33.52      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   40.79      SUBAREA RUNOFF(CFS) =   37.14
  EFFECTIVE AREA(ACRES) =    365.02    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    365.02       PEAK FLOW RATE(CFS) =    332.23

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 26.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   23.52
```

```
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.51
    HALFSTREET FLOOD WIDTH(FEET) =   17.47
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.63
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.84
  LONGEST FLOWPATH FROM NODE  20750.00 TO NODE  20762.00 = 11735.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020762.0 TO NODE LR020763.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1740.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1600.00
  FLOW LENGTH(FEET) =  1727.01   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  28.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  36.73
  PIPE-FLOW(CFS) =    332.23
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.78    Tc(MIN.) =  28.62
  LONGEST FLOWPATH FROM NODE  20750.00 TO NODE  20763.00 = 13462.17 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020763.0 TO NODE LR020763.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  28.62
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.497
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B       19.08      0.75      0.50    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B      133.50      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       16.16      0.75      0.60    56
  COMMERCIAL                 B       11.70      0.75      0.10    56
  MOBILE HOME PARK           B        5.20      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.62
  SUBAREA AREA(ACRES) =  185.64      SUBAREA RUNOFF(CFS) =  172.56
  EFFECTIVE AREA(ACRES) =    550.66   AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.66
  TOTAL AREA(ACRES) =    550.66       PEAK FLOW RATE(CFS) =     496.52

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

****************************************************************************
  FLOW PROCESS FROM NODE LR020763.0 TO NODE LR020763.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
```



```
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  28.62
  RAINFALL INTENSITY(INCH/HR) =   1.50
  AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.66
  EFFECTIVE STREAM AREA(ACRES) =   550.66
  TOTAL STREAM AREA(ACRES) =   550.66
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    496.52
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1      1111.41   26.78     1078.67  LR020620.0
     2       496.52   28.62      550.66  LR020750.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.64;6H= 2.29;24H= 4.97
  S-GRAPH: VALLEY(DEV.)= 86.9%;VALLEY(UNDEV.)/DESERT= 13.1%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.45; LAG(HR) = 0.36; Fm(INCH/HR) = 0.48; Ybar = 0.53
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.93; 30M = 0.93; 1HR = 0.93;
  3HR = 0.99; 6HR = 0.99; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1629.33
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20763.00 = 17829.27 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0249; Lca/L=0.4,n=.0223; Lca/L=0.5,n=.0205;Lca/L=0.6,n=.0191
  TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     338.05
  PEAK FLOW RATE(CFS) =   1638.31

****************************************************************************
  FLOW PROCESS FROM NODE LR020763.0 TO NODE LR020764.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1600.00  DOWNSTREAM(FEET) =   1510.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3292.21   CHANNEL SLOPE =  0.0273
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   1638.31
  FLOW VELOCITY(FEET/SEC.) =  28.35   FLOW DEPTH(FEET) =   3.43
  TRAVEL TIME(MIN.) =   1.94   Tc(MIN.) =  28.72
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20764.00 = 21121.48 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020764.0 TO NODE LR020764.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  28.72
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.494
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
   RESIDENTIAL
   "3-4 DWELLINGS/ACRE"       B       27.93      0.75      0.60    56
   MOBILE HOME PARK           B        2.86      0.75      0.25    56
   RESIDENTIAL
   "2 DWELLINGS/ACRE"         B       36.04      0.75      0.70    56
   PUBLIC PARK                B        0.07      0.75      0.85    56
   COMMERCIAL                 B        0.16      0.75      0.10    56
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.64
   SUBAREA AREA(ACRES) =   67.06
   UNIT-HYDROGRAPH DATA:
   RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.64;6H= 2.29;24H= 4.97
   S-GRAPH: VALLEY(DEV.)= 87.4%;VALLEY(UNDEV.)/DESERT= 12.6%
            MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
   Tc(HR) = 0.48; LAG(HR) = 0.38; Fm(INCH/HR) = 0.48; Ybar = 0.53
   USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
   DEPTH-AREA FACTORS: 5M = 0.92; 30M = 0.92; 1HR = 0.92;
   3HR = 0.99; 6HR = 0.99; 24HR= 1.00
   UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1696.39
   LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20764.00 = 21121.48 FEET.
    EQUIVALENT BASIN FACTOR APPROXIMATIONS:
    Lca/L=0.3,n=.0233; Lca/L=0.4,n=.0209; Lca/L=0.5,n=.0192;Lca/L=0.6,n=.0179
   TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     352.03
   UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1601.16
   TOTAL AREA(ACRES) =   1696.39       PEAK FLOW RATE(CFS) =    1638.31
   NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

   SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
   5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.64; 6HR = 2.29; 24HR = 5.01

 ****************************************************************************
   FLOW PROCESS FROM NODE LR020764.0 TO NODE LR020764.0 IS CODE = 152
 ----------------------------------------------------------------------------
   >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
 ============================================================================
   PEAK FLOWRATE TABLE FILE NAME: 20764.DNA
 ============================================================================
   END OF STUDY SUMMARY:
   TOTAL AREA(ACRES)     =   1696.39  TC(MIN.) =     28.72
   AREA-AVERAGED Fm(INCH/HR)=  0.48   Ybar =  0.53
   PEAK FLOW RATE(CFS)   =   1638.31
 ============================================================================
 ============================================================================
   END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

```
******************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
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             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                        Analysis prepared by:

                        San Bernardino County
                  Transportation/ Flood Control Department

                        Water Resources Division

 ************************ DESCRIPTION OF STUDY *************************
* LR 0208ZZ FILE                                                       *
*  25-YEAR STORM                                                       *
*                                                                      *
 **********************************************************************

  FILE NAME: LR0208ZZ.Z25
  TIME/DATE OF STUDY: 11:26 02/23/2006
==============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 0.9600

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
```



```
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


******************************************************************************
  FLOW PROCESS FROM NODE LR020800.0 TO NODE LR020800.5 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   706.90
  ELEVATION DATA: UPSTREAM(FEET) =   2210.00  DOWNSTREAM(FEET) =   2170.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.095
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.797
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.13      0.75      0.70    56   10.73
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.48      0.75      0.60    56   10.09
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA RUNOFF(CFS) =     17.78
  TOTAL AREA(ACRES) =      8.61   PEAK FLOW RATE(CFS) =     17.78

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

******************************************************************************
  FLOW PROCESS FROM NODE LR020800.5 TO NODE LR020801.0 IS CODE =  63
------------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
==============================================================================
  UPSTREAM ELEVATION(FEET) = 2170.00  DOWNSTREAM ELEVATION(FEET) = 2160.00
  STREET LENGTH(FEET) =   371.36   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00
```

```
 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      23.50
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.46
   HALFSTREET FLOOD WIDTH(FEET) =   16.55
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.11
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.88
 STREET FLOW TRAVEL TIME(MIN.) =   1.51   Tc(MIN.) =  11.60
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.573
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        4.82      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.32      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
 SUBAREA AREA(ACRES) =    6.14      SUBAREA RUNOFF(CFS) =   11.41
 EFFECTIVE AREA(ACRES) =     14.75    AREA-AVERAGED Fm(INCH/HR) =  0.50
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.67
 TOTAL AREA(ACRES) =     14.75        PEAK FLOW RATE(CFS) =      27.46

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.48   HALFSTREET FLOOD WIDTH(FEET) =  17.57
 FLOW VELOCITY(FEET/SEC.) =  4.28   DEPTH*VELOCITY(FT*FT/SEC.) =   2.05
 LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20801.00 =  1078.26 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020801.0 TO NODE LR020802.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2160.00  DOWNSTREAM ELEVATION(FEET) = 2153.00
 STREET LENGTH(FEET) =   226.34   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
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 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.80

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      32.93
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.49
   HALFSTREET FLOOD WIDTH(FEET) =   18.00
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.76
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.34
 STREET FLOW TRAVEL TIME(MIN.) =   0.79   Tc(MIN.) =  12.39
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.473
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.63      0.75      0.60    56
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        5.58      0.75      0.70    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
 SUBAREA AREA(ACRES) =    6.21      SUBAREA RUNOFF(CFS) =   10.94
 EFFECTIVE AREA(ACRES) =     20.96    AREA-AVERAGED Fm(INCH/HR) =  0.51
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
 TOTAL AREA(ACRES) =     20.96        PEAK FLOW RATE(CFS) =      37.08

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.51   HALFSTREET FLOOD WIDTH(FEET) =  18.32
 FLOW VELOCITY(FEET/SEC.) =  4.98   DEPTH*VELOCITY(FT*FT/SEC.) =   2.52
 LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20802.00 =  1304.60 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020802.0 TO NODE LR020803.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2153.00  DOWNSTREAM ELEVATION(FEET) = 2138.00
 STREET LENGTH(FEET) =   346.96   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.73

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      40.14
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.50
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    HALFSTREET FLOOD WIDTH(FEET) =   18.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.70
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.82
  STREET FLOW TRAVEL TIME(MIN.) =   1.02   Tc(MIN.) =  13.41
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.359
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        3.18      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.51      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    3.69      SUBAREA RUNOFF(CFS) =    6.13
  EFFECTIVE AREA(ACRES) =     24.65    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     24.65        PEAK FLOW RATE(CFS) =      41.05

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.50   HALFSTREET FLOOD WIDTH(FEET) =  18.00
  FLOW VELOCITY(FEET/SEC.) =  5.72   DEPTH*VELOCITY(FT*FT/SEC.) =   2.85
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20803.00 =  1651.56 FEET.

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  FLOW PROCESS FROM NODE LR020803.0 TO NODE LR020804.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2138.00  DOWNSTREAM ELEVATION(FEET) = 2133.00
  STREET LENGTH(FEET) =   266.26   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      52.16
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.59
    HALFSTREET FLOOD WIDTH(FEET) =   22.65
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.74
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.81
  STREET FLOW TRAVEL TIME(MIN.) =   0.94   Tc(MIN.) =  14.34
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.266
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
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       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       12.65      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.45      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =   14.10      SUBAREA RUNOFF(CFS) =   22.20
  EFFECTIVE AREA(ACRES) =     38.75    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     38.75        PEAK FLOW RATE(CFS) =      61.18

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.62   HALFSTREET FLOOD WIDTH(FEET) =  24.06
  FLOW VELOCITY(FEET/SEC.) =  4.97   DEPTH*VELOCITY(FT*FT/SEC.) =   3.09
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  266.3 FT WITH ELEVATION-DROP =   5.0 FT, IS   32.8 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20804.00
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20804.00 =  1917.82 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020804.0 TO NODE LR020805.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2133.00  DOWNSTREAM ELEVATION(FEET) = 2128.00
  STREET LENGTH(FEET) =   315.22   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      68.67
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.66
    HALFSTREET FLOOD WIDTH(FEET) =   25.95
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.84
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.19
  STREET FLOW TRAVEL TIME(MIN.) =   1.09   Tc(MIN.) =  15.43
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.168
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        7.96      0.75      0.70    56
  RESIDENTIAL
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  "3-4 DWELLINGS/ACRE"       B        2.07      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   10.03      SUBAREA RUNOFF(CFS) =   14.99
  EFFECTIVE AREA(ACRES) =     48.78    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     48.78        PEAK FLOW RATE(CFS) =      72.78

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.67   HALFSTREET FLOOD WIDTH(FEET) =  26.50
  FLOW VELOCITY(FEET/SEC.) =  4.93   DEPTH*VELOCITY(FT*FT/SEC.) =   3.30
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20805.00 =  2233.04 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020805.0 TO NODE LR020806.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2128.00  DOWNSTREAM ELEVATION(FEET) = 2098.00
  STREET LENGTH(FEET) =   616.63   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     108.57
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.64
    HALFSTREET FLOOD WIDTH(FEET) =   24.91
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.26
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.27
  STREET FLOW TRAVEL TIME(MIN.) =   1.24   Tc(MIN.) =  16.67
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.070
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       36.94      0.75      0.70    56
  SCHOOL                     B        3.99      0.75      0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        9.63      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.22      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA AREA(ACRES) =   50.78      SUBAREA RUNOFF(CFS) =   71.56
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  EFFECTIVE AREA(ACRES) =     99.56    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     99.56        PEAK FLOW RATE(CFS) =     140.01

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.69   HALFSTREET FLOOD WIDTH(FEET) =  27.47
  FLOW VELOCITY(FEET/SEC.) =  8.85   DEPTH*VELOCITY(FT*FT/SEC.) =   6.10
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  616.6 FT WITH ELEVATION-DROP =  30.0 FT, IS  106.7 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20806.00
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20806.00 =  2849.67 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020806.0 TO NODE LR020807.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2098.00  DOWNSTREAM ELEVATION(FEET) = 2090.00
  STREET LENGTH(FEET) =   573.68   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     143.28
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.85
    HALFSTREET FLOOD WIDTH(FEET) =   35.41
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.55
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.71
  STREET FLOW TRAVEL TIME(MIN.) =   1.72   Tc(MIN.) =  18.40
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.951
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.85      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.45      0.75      0.60    56
  SCHOOL                     B        0.68      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.66
  SUBAREA AREA(ACRES) =    4.98      SUBAREA RUNOFF(CFS) =    6.54
  EFFECTIVE AREA(ACRES) =    104.54    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    104.54        PEAK FLOW RATE(CFS) =     140.01
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  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.84   HALFSTREET FLOOD WIDTH(FEET) =  35.10
  FLOW VELOCITY(FEET/SEC.) =  5.52   DEPTH*VELOCITY(FT*FT/SEC.) =   4.65
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20807.00 =  3423.35 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020807.0 TO NODE LR020808.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2090.00  DOWNSTREAM ELEVATION(FEET) = 2070.00
  STREET LENGTH(FEET) =   620.19   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.79

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     145.57
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.74
    HALFSTREET FLOOD WIDTH(FEET) =   30.22
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.66
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.70
  STREET FLOW TRAVEL TIME(MIN.) =   1.35   Tc(MIN.) =  19.74
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.870
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        8.19      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.94      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    9.13      SUBAREA RUNOFF(CFS) =   11.13
  EFFECTIVE AREA(ACRES) =    113.67    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    113.67        PEAK FLOW RATE(CFS) =     140.01
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

  END OF SUBAREA STREET FLOW HYDRAULICS:
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  DEPTH(FEET) = 0.74   HALFSTREET FLOOD WIDTH(FEET) =  29.79
  FLOW VELOCITY(FEET/SEC.) =  7.57   DEPTH*VELOCITY(FT*FT/SEC.) =   5.57
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20808.00 =  4043.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020808.0 TO NODE LR020809.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2070.00  DOWNSTREAM ELEVATION(FEET) = 2020.00
  STREET LENGTH(FEET) =   545.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.60

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     154.01
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.64
    HALFSTREET FLOOD WIDTH(FEET) =   25.22
    AVERAGE FLOW VELOCITY(FEET/SEC.) =   11.45
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.38
  STREET FLOW TRAVEL TIME(MIN.) =   0.79   Tc(MIN.) =  20.54
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.827
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B       20.40      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        3.29      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =   23.69      SUBAREA RUNOFF(CFS) =   28.00
  EFFECTIVE AREA(ACRES) =    137.36    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    137.36        PEAK FLOW RATE(CFS) =     162.96

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.66   HALFSTREET FLOOD WIDTH(FEET) =  25.77
  FLOW VELOCITY(FEET/SEC.) = 11.63   DEPTH*VELOCITY(FT*FT/SEC.) =   7.62

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.60
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
```

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  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.09
  PIPE-FLOW(CFS) =     63.17
  PIPEFLOW TRAVEL TIME(MIN.) =   0.45    Tc(MIN.) =  20.20
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.845
  SUBAREA AREA(ACRES) =   23.69      SUBAREA RUNOFF(CFS) =   28.39
  TOTAL AREA(ACRES) =    137.36        PEAK FLOW RATE(CFS) =    165.24

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  102.07
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.57
    HALFSTREET FLOOD WIDTH(FEET) =   21.62
    AVERAGE FLOW VELOCITY(FEET/SEC.) =   10.13
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.80
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20809.00 =  4588.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020809.0 TO NODE LR020810.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2020.00  DOWNSTREAM ELEVATION(FEET) = 2010.00
  STREET LENGTH(FEET) =   570.75   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     174.02
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.87
    HALFSTREET FLOOD WIDTH(FEET) =   36.57
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.33
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.52
  STREET FLOW TRAVEL TIME(MIN.) =   1.50   Tc(MIN.) =  21.70
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.767
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       12.89      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.65      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
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  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   15.54      SUBAREA RUNOFF(CFS) =   17.57
  EFFECTIVE AREA(ACRES) =    152.90    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    152.90        PEAK FLOW RATE(CFS) =     173.20

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.87   HALFSTREET FLOOD WIDTH(FEET) =  36.51
  FLOW VELOCITY(FEET/SEC.) =  6.32   DEPTH*VELOCITY(FT*FT/SEC.) =   5.50
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.86
  PIPE-FLOW(CFS) =     64.54
  PIPEFLOW TRAVEL TIME(MIN.) =   0.88    Tc(MIN.) =  21.07
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.799
  SUBAREA AREA(ACRES) =   15.54      SUBAREA RUNOFF(CFS) =   18.01
  TOTAL AREA(ACRES) =    152.90        PEAK FLOW RATE(CFS) =    177.51

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  112.97
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.76
    HALFSTREET FLOOD WIDTH(FEET) =   30.83
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.72
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.33
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20810.00 =  5159.29 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020810.0 TO NODE LR020811.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2010.00  DOWNSTREAM ELEVATION(FEET) = 1970.00
  STREET LENGTH(FEET) =   617.03   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.65

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     197.44
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.73
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  HALFSTREET FLOOD WIDTH(FEET) =   29.73
  AVERAGE FLOW VELOCITY(FEET/SEC.) =   10.72
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.88
 STREET FLOW TRAVEL TIME(MIN.) =   0.96   Tc(MIN.) =  22.03
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.751
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B       30.03      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        5.60      0.75      0.60    56
 PUBLIC PARK                B        0.12      0.75      0.85    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
 SUBAREA AREA(ACRES) =   35.75      SUBAREA RUNOFF(CFS) =   39.86
 EFFECTIVE AREA(ACRES) =    188.65    AREA-AVERAGED Fm(INCH/HR) =  0.51
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
 TOTAL AREA(ACRES) =    188.65        PEAK FLOW RATE(CFS) =     210.85

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.75   HALFSTREET FLOOD WIDTH(FEET) =  30.47
 FLOW VELOCITY(FEET/SEC.) = 10.93   DEPTH*VELOCITY(FT*FT/SEC.) =   8.19

 *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
        THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.65
 SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
 ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
 ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
 ASSUME FULL-FLOWING PIPELINE
 PIPE-FLOW VELOCITY(FEET/SEC.) =  19.60
 PIPE-FLOW(CFS) =     96.28
 PIPEFLOW TRAVEL TIME(MIN.) =   0.52    Tc(MIN.) =  21.60
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.772
 SUBAREA AREA(ACRES) =   35.75      SUBAREA RUNOFF(CFS) =   40.54
 TOTAL AREA(ACRES) =    188.65        PEAK FLOW RATE(CFS) =    214.42

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  118.14
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.63
   HALFSTREET FLOOD WIDTH(FEET) =   24.36
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.38
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.88
 LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20811.00 =  5776.32 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020811.0 TO NODE LR020812.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
```



```
 ELEVATION DATA: UPSTREAM(FEET) =   1970.00  DOWNSTREAM(FEET) =   1910.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1453.09   CHANNEL SLOPE =  0.0413
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
 MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
 CHANNEL FLOW THRU SUBAREA(CFS) =    214.42
 FLOW VELOCITY(FEET/SEC.) =   4.25   FLOW DEPTH(FEET) =   1.00
 TRAVEL TIME(MIN.) =   5.70   Tc(MIN.) =  27.29
 LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20812.00 =  7229.41 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020812.0 TO NODE LR020812.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  27.29
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.540
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        6.60      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.55      0.75      0.60    56
 PUBLIC PARK                B       18.85      0.75      0.85    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.81
 SUBAREA AREA(ACRES) =   26.00      SUBAREA RUNOFF(CFS) =   21.92
 EFFECTIVE AREA(ACRES) =    214.65   AREA-AVERAGED Fm(INCH/HR) =  0.52
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.70
 TOTAL AREA(ACRES) =    214.65        PEAK FLOW RATE(CFS) =     214.42
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

****************************************************************************
 FLOW PROCESS FROM NODE LR020812.0 TO NODE LR020813.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1910.00  DOWNSTREAM(FEET) =   1870.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1523.12   CHANNEL SLOPE =  0.0263
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
 MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
 CHANNEL FLOW THRU SUBAREA(CFS) =    214.42
 FLOW VELOCITY(FEET/SEC.) =   3.58   FLOW DEPTH(FEET) =   1.09
 TRAVEL TIME(MIN.) =   7.08   Tc(MIN.) =  34.38
 LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20813.00 =  8752.53 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020813.0 TO NODE LR020813.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  34.38
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.341
 SUBAREA LOSS RATE DATA(AMC  II):
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 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
PUBLIC PARK                B       80.80      0.75      0.85    56
RESIDENTIAL
"2 DWELLINGS/ACRE"         B      130.26      0.75      0.70    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B       24.87      0.75      0.60    56
RESIDENTIAL
".4 DWELLING/ACRE"         B        2.88      0.75      0.90    56
NATURAL FAIR COVER
"OPEN BRUSH"               B        0.24      0.61      1.00    66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.74
SUBAREA AREA(ACRES) =  239.05      SUBAREA RUNOFF(CFS) =  168.96
EFFECTIVE AREA(ACRES) =    453.70   AREA-AVERAGED Fm(INCH/HR) =  0.54
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.72
TOTAL AREA(ACRES) =    453.70       PEAK FLOW RATE(CFS) =     327.42

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

****************************************************************************
FLOW PROCESS FROM NODE LR020813.0 TO NODE LR020814.0 IS CODE =  42
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
UPSTREAM NODE ELEVATION(FEET) =  1870.00
DOWNSTREAM NODE ELEVATION(FEET) =  1800.00
FLOW LENGTH(FEET) =  1542.94   MANNING'S N =  0.013

USER SPECIFIED PIPE DIAMETER(INCH) =  63.00    NUMBER OF PIPES =   1
DEPTH OF FLOW IN  63.0 INCH PIPE IS  32.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  29.45
PIPE-FLOW(CFS) =    327.42
*NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
PIPEFLOW TRAVEL TIME(MIN.) =   0.87    Tc(MIN.) =  35.25
LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20814.00 = 10295.47 FEET.

****************************************************************************
FLOW PROCESS FROM NODE LR020814.0 TO NODE LR020814.0 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN) =  35.25
*  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.321
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B       11.54      0.75      0.60    56
RESIDENTIAL
"2 DWELLINGS/ACRE"         B       58.78      0.75      0.70    56
PUBLIC PARK                B        6.25      0.75      0.85    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
SUBAREA AREA(ACRES) =   76.57      SUBAREA RUNOFF(CFS) =   55.09
EFFECTIVE AREA(ACRES) =    530.27   AREA-AVERAGED Fm(INCH/HR) =  0.54
```



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AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.72
TOTAL AREA(ACRES) =    530.27       PEAK FLOW RATE(CFS) =     374.33

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

****************************************************************************
FLOW PROCESS FROM NODE LR020814.0 TO NODE LR020815.0 IS CODE =  42
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
UPSTREAM NODE ELEVATION(FEET) =  1800.00
DOWNSTREAM NODE ELEVATION(FEET) =  1720.00
FLOW LENGTH(FEET) =  1968.59   MANNING'S N =  0.013

USER SPECIFIED PIPE DIAMETER(INCH) =  66.00    NUMBER OF PIPES =   1
DEPTH OF FLOW IN  66.0 INCH PIPE IS  35.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  29.21
PIPE-FLOW(CFS) =    374.33
*NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
PIPEFLOW TRAVEL TIME(MIN.) =   1.12    Tc(MIN.) =  36.37
LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20815.00 = 12264.06 FEET.

****************************************************************************
FLOW PROCESS FROM NODE LR020815.0 TO NODE LR020815.0 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN) =  36.37
*  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.296
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B       28.73      0.75      0.60    56
RESIDENTIAL
"2 DWELLINGS/ACRE"         B      126.12      0.75      0.70    56
PUBLIC PARK                B       14.88      0.75      0.85    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
SUBAREA AREA(ACRES) =  169.73      SUBAREA RUNOFF(CFS) =  118.46
EFFECTIVE AREA(ACRES) =    700.00   AREA-AVERAGED Fm(INCH/HR) =  0.53
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.71
TOTAL AREA(ACRES) =    700.00       PEAK FLOW RATE(CFS) =     481.04

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

****************************************************************************
FLOW PROCESS FROM NODE LR020815.0 TO NODE LR020815.0 IS CODE =  71
----------------------------------------------------------------------------
>>>>>PEAK FLOW RATE ESTIMATOR CHANGED TO UNIT-HYDROGRAPH METHOD<<<<<
>>>>>USING TIME-OF-CONCENTRATION OF LONGEST FLOWPATH<<<<<
============================================================================
UNIT-HYDROGRAPH DATA:
RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.63;6H= 2.28;24H= 4.69
S-GRAPH: VALLEY(DEV.)= 99.5%;VALLEY(UNDEV.)/DESERT=  0.5%
```

```
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.61; LAG(HR) = 0.48; Fm(INCH/HR) = 0.53; Ybar = 0.59
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 1.00; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    700.00
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20815.00 = 12264.06 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0465; Lca/L=0.4,n=.0417; Lca/L=0.5,n=.0383;Lca/L=0.6,n=.0357
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     122.10
  UNIT-HYDROGRAPH METHOD PEAK FLOW RATE(CFS) =    573.85
  TOTAL PEAK FLOW RATE(CFS) =    573.85 (SOURCE FLOW INCLUDED)
  RATIONAL METHOD PEAK FLOW RATE(CFS) =    481.04
   (UPSTREAM NODE PEAK FLOW RATE(CFS) =    481.04)
  PEAK FLOW RATE(CFS) USED =    573.85

****************************************************************************
  FLOW PROCESS FROM NODE LR020815.0 TO NODE LR020816.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1720.00  DOWNSTREAM(FEET) =  1680.00
  FLOW LENGTH(FEET) =  1236.10   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   6.00   GIVEN BOX HEIGHT(FEET) =   3.00
  *GIVEN BOX HEIGHT(FEET) =   3.00   ESTIMATED BOX BASEWIDTH(FEET) =    9.89
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  19.33
  BOX-FLOW(CFS) =    573.85
  BOX-FLOW TRAVEL TIME(MIN.) =   1.07    Tc(MIN.) =  37.44
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20816.00 = 13500.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020816.0 TO NODE LR020816.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  37.44
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.274
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       11.74      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       40.54      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   52.28
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.63;6H= 2.28;24H= 4.69
  S-GRAPH: VALLEY(DEV.)= 99.6%;VALLEY(UNDEV.)/DESERT=  0.4%
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.62; LAG(HR) = 0.50; Fm(INCH/HR) = 0.53; Ybar = 0.59
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    752.28
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20816.00 = 13500.16 FEET.
```



```
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0444; Lca/L=0.4,n=.0398; Lca/L=0.5,n=.0365;Lca/L=0.6,n=.0341
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     131.66
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    612.52
  TOTAL AREA(ACRES) =    752.28       PEAK FLOW RATE(CFS) =     612.52

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

****************************************************************************
  FLOW PROCESS FROM NODE LR020816.0 TO NODE LR020823.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1680.00  DOWNSTREAM(FEET) =  1635.00
  FLOW LENGTH(FEET) =  1150.94   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   6.00   GIVEN BOX HEIGHT(FEET) =   3.00
  *GIVEN BOX HEIGHT(FEET) =   3.00   ESTIMATED BOX BASEWIDTH(FEET) =    9.64
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  21.17
  BOX-FLOW(CFS) =    612.52
  BOX-FLOW TRAVEL TIME(MIN.) =   0.91    Tc(MIN.) =  38.34
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20823.00 = 14651.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020823.0 TO NODE LR020823.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  38.34
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.256
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        8.26      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.53      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   10.79
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.63;6H= 2.28;24H= 4.69
  S-GRAPH: VALLEY(DEV.)= 99.6%;VALLEY(UNDEV.)/DESERT=  0.4%
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.64; LAG(HR) = 0.51; Fm(INCH/HR) = 0.53; Ybar = 0.59
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    763.07
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20823.00 = 14651.10 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0427; Lca/L=0.4,n=.0383; Lca/L=0.5,n=.0352;Lca/L=0.6,n=.0328
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     133.63
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    615.44
  TOTAL AREA(ACRES) =    763.07       PEAK FLOW RATE(CFS) =     615.44

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
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```
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

****************************************************************************
  FLOW PROCESS FROM NODE LR020823.0 TO NODE LR020823.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =     615.44    Tc(MIN.) =  38.34
  AREA-AVERAGED Fm(INCH/HR) =  0.53   Ybar = 0.59
  TOTAL AREA(ACRES) =     763.07

****************************************************************************
  FLOW PROCESS FROM NODE LR020820.0 TO NODE LR020821.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   724.32
  ELEVATION DATA: UPSTREAM(FEET) =   1735.00  DOWNSTREAM(FEET) =   1720.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.463
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.465
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.07      0.75      0.60    56   12.46
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.01      0.75      0.70    56   13.25
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA RUNOFF(CFS) =     14.26
  TOTAL AREA(ACRES) =      8.08   PEAK FLOW RATE(CFS) =     14.26

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

****************************************************************************
  FLOW PROCESS FROM NODE LR020821.0 TO NODE LR020822.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1720.00  DOWNSTREAM ELEVATION(FEET) = 1700.00
  STREET LENGTH(FEET) =   668.72   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
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  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.81

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      24.87
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.46
    HALFSTREET FLOOD WIDTH(FEET) =   16.55
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.35
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.99
  STREET FLOW TRAVEL TIME(MIN.) =   2.56   Tc(MIN.) =  15.03
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.203
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.10      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        9.73      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA AREA(ACRES) =   13.83      SUBAREA RUNOFF(CFS) =   21.18
  EFFECTIVE AREA(ACRES) =     21.91    AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.67
  TOTAL AREA(ACRES) =     21.91        PEAK FLOW RATE(CFS) =      33.54

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.50   HALFSTREET FLOOD WIDTH(FEET) =  18.00
  FLOW VELOCITY(FEET/SEC.) =  4.73   DEPTH*VELOCITY(FT*FT/SEC.) =   2.35
  LONGEST FLOWPATH FROM NODE  20820.00 TO NODE  20822.00 =  1393.04 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020822.0 TO NODE LR020823.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1700.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1635.00
  FLOW LENGTH(FEET) =  1753.00   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  13.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.37
  PIPE-FLOW(CFS) =     33.54
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   2.02    Tc(MIN.) =  17.04
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.043
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       28.07      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        8.56      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
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  SUBAREA AREA(ACRES) =   36.63      SUBAREA RUNOFF(CFS) =   50.66
  EFFECTIVE AREA(ACRES) =     58.54    AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.67
  TOTAL AREA(ACRES) =     58.54        PEAK FLOW RATE(CFS) =     81.04

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  6.0       STREET HALFWIDTH(FEET) = 18.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   47.50
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.53
    HALFSTREET FLOOD WIDTH(FEET) =   19.36
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.77
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.04
  LONGEST FLOWPATH FROM NODE  20820.00 TO NODE  20823.00 =  3146.04 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020823.0 TO NODE LR020823.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  17.04
  RAINFALL INTENSITY(INCH/HR) =   2.04
  AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.67
  EFFECTIVE STREAM AREA(ACRES) =    58.54
  TOTAL STREAM AREA(ACRES) =    58.54
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     81.04
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1       615.44   38.34      763.07  LR020800.0
     2        81.04   17.04       58.54  LR020820.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.63;6H= 2.28;24H= 4.69
  S-GRAPH: VALLEY(DEV.)= 99.6%;VALLEY(UNDEV.)/DESERT=  0.4%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.64; LAG(HR) = 0.51; Fm(INCH/HR) = 0.53; Ybar = 0.59
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
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  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    821.61
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20823.00 = 14651.10 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0427; Lca/L=0.4,n=.0383; Lca/L=0.5,n=.0352;Lca/L=0.6,n=.0328
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     144.36
  PEAK FLOW RATE(CFS) =    661.63

****************************************************************************
  FLOW PROCESS FROM NODE LR020823.0 TO NODE LR020824.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1635.00  DOWNSTREAM(FEET) =  1599.00
  FLOW LENGTH(FEET) =  1479.71   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   6.00   GIVEN BOX HEIGHT(FEET) =   3.00
  *GIVEN BOX HEIGHT(FEET) =   3.00   ESTIMATED BOX BASEWIDTH(FEET) =   12.70
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  17.36
  BOX-FLOW(CFS) =    661.63
  BOX-FLOW TRAVEL TIME(MIN.) =   1.42    Tc(MIN.) =  39.76
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20824.00 = 16130.81 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020824.0 TO NODE LR020824.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  39.76
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.229
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       96.44      0.75       0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       25.64      0.75       0.60    56
  COMMERCIAL                 B        1.07      0.75       0.10    56
  PUBLIC PARK                B        0.22      0.75       0.85    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        3.67      0.63       1.00    65
  SCHOOL                     B        0.34      0.75       0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =  127.38
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.63;6H= 2.28;24H= 4.69
  S-GRAPH: VALLEY(DEV.)= 99.3%;VALLEY(UNDEV.)/DESERT=  0.7%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.66; LAG(HR) = 0.53; Fm(INCH/HR) = 0.53; Ybar = 0.59
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    948.99
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20824.00 = 16130.81 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0409; Lca/L=0.4,n=.0366; Lca/L=0.5,n=.0337;Lca/L=0.6,n=.0314
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     167.53
```

```
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    745.37
  TOTAL AREA(ACRES) =    948.99       PEAK FLOW RATE(CFS) =     745.37

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

****************************************************************************
  FLOW PROCESS FROM NODE LR020824.0 TO NODE LR020825.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1599.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1550.00
  FLOW LENGTH(FEET) =  1211.57   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  81.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  81.0 INCH PIPE IS  47.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  34.56
  PIPE-FLOW(CFS) =    745.37
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.58    Tc(MIN.) =  40.35
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20825.00 = 17342.38 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020825.0 TO NODE LR020825.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  40.35
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.218
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       10.70      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       31.03      0.75      0.70    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        0.52      0.63      1.00    65
  PUBLIC PARK                B        6.54      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   48.79
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.63;6H= 2.28;24H= 4.69
  S-GRAPH: VALLEY(DEV.)= 99.2%;VALLEY(UNDEV.)/DESERT=  0.8%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.67; LAG(HR) = 0.54; Fm(INCH/HR) = 0.53; Ybar = 0.59
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    997.78
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20825.00 = 17342.38 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0393; Lca/L=0.4,n=.0352; Lca/L=0.5,n=.0324;Lca/L=0.6,n=.0302
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     176.11
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    773.94
```



```
  TOTAL AREA(ACRES) =    997.78       PEAK FLOW RATE(CFS) =     773.94

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

****************************************************************************
  FLOW PROCESS FROM NODE LR020825.0 TO NODE LR020826.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1550.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1535.00
  FLOW LENGTH(FEET) =   755.22   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  93.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  93.0 INCH PIPE IS  54.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  26.70
  PIPE-FLOW(CFS) =    773.94
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.47    Tc(MIN.) =  40.82
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20826.00 = 18097.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020826.0 TO NODE LR020826.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  40.82
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.210
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        9.73      0.75      0.60    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        0.52      0.63      1.00    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.62
  SUBAREA AREA(ACRES) =   10.25
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.63;6H= 2.28;24H= 4.69
  S-GRAPH: VALLEY(DEV.)= 99.2%;VALLEY(UNDEV.)/DESERT=  0.8%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.68; LAG(HR) = 0.54; Fm(INCH/HR) = 0.53; Ybar = 0.58
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.95; 30M = 0.95; 1HR = 0.95;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1008.03
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20826.00 = 18097.60 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0383; Lca/L=0.4,n=.0344; Lca/L=0.5,n=.0316;Lca/L=0.6,n=.0295
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     178.16
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    774.46
  TOTAL AREA(ACRES) =   1008.03       PEAK FLOW RATE(CFS) =     774.46

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR020826.0 TO NODE LR020827.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1535.00  DOWNSTREAM(FEET) =  1500.00
  FLOW LENGTH(FEET) =   969.04   MANNING'S N =  0.013
  GIVEN BOX BASEWIDTH(FEET) =  10.00   GIVEN BOX HEIGHT(FEET) =   3.50
  FLOWDEPTH IN BOX IS  2.52 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  30.70
  BOX-FLOW(CFS) =    774.46
  BOX-FLOW TRAVEL TIME(MIN.) =   0.53    Tc(MIN.) =  41.35
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20827.00 = 19066.64 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020827.0 TO NODE LR020827.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  41.35
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.200
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       21.08      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   21.08
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.63;6H= 2.28;24H= 4.69
  S-GRAPH: VALLEY(DEV.)= 99.2%;VALLEY(UNDEV.)/DESERT=  0.8%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.69; LAG(HR) = 0.55; Fm(INCH/HR) = 0.52; Ybar = 0.58
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.95; 30M = 0.95; 1HR = 0.95;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1029.11
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20827.00 = 19066.64 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0373; Lca/L=0.4,n=.0334; Lca/L=0.5,n=.0307;Lca/L=0.6,n=.0287
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     182.45
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    781.51
  TOTAL AREA(ACRES) =   1029.11       PEAK FLOW RATE(CFS) =     781.51

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

****************************************************************************
  FLOW PROCESS FROM NODE LR020827.0 TO NODE LR020828.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1500.00  DOWNSTREAM(FEET) =  1480.00
  FLOW LENGTH(FEET) =   712.41   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  10.00   GIVEN BOX HEIGHT(FEET) =   3.50
```



```
  *GIVEN BOX HEIGHT(FEET) =   3.50   ESTIMATED BOX BASEWIDTH(FEET) =   11.24
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  19.87
  BOX-FLOW(CFS) =    781.51
  BOX-FLOW TRAVEL TIME(MIN.) =   0.60    Tc(MIN.) =  41.94
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20828.00 = 19779.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020828.0 TO NODE LR020828.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  41.94
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.190
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       24.73      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   24.73
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.63;6H= 2.28;24H= 4.69
  S-GRAPH: VALLEY(DEV.)= 99.2%;VALLEY(UNDEV.)/DESERT=  0.8%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.70; LAG(HR) = 0.56; Fm(INCH/HR) = 0.52; Ybar = 0.58
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.95; 30M = 0.95; 1HR = 0.95;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1053.84
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20828.00 = 19779.05 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0367; Lca/L=0.4,n=.0329; Lca/L=0.5,n=.0303;Lca/L=0.6,n=.0282
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     187.48
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    788.84
  TOTAL AREA(ACRES) =   1053.84       PEAK FLOW RATE(CFS) =     788.84

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

****************************************************************************
  FLOW PROCESS FROM NODE LR020828.0 TO NODE LR020829.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1480.00  DOWNSTREAM(FEET) =  1465.00
  FLOW LENGTH(FEET) =   766.85   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  10.00   GIVEN BOX HEIGHT(FEET) =   3.50
  *GIVEN BOX HEIGHT(FEET) =   3.50   ESTIMATED BOX BASEWIDTH(FEET) =   13.26
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  17.00
  BOX-FLOW(CFS) =    788.84
  BOX-FLOW TRAVEL TIME(MIN.) =   0.75    Tc(MIN.) =  42.70
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20829.00 = 20545.90 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020829.0 TO NODE LR020829.0 IS CODE =  81
----------------------------------------------------------------------------
```

```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN) =  42.70
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.177
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       13.31      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   13.31
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.63;6H= 2.28;24H= 4.69
  S-GRAPH: VALLEY(DEV.)= 99.2%;VALLEY(UNDEV.)/DESERT=  0.8%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.71; LAG(HR) = 0.57; Fm(INCH/HR) = 0.52; Ybar = 0.58
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.95; 30M = 0.95; 1HR = 0.95;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1067.15
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20829.00 = 20545.90 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0362; Lca/L=0.4,n=.0325; Lca/L=0.5,n=.0298;Lca/L=0.6,n=.0278
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     190.18
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    780.31
  TOTAL AREA(ACRES) =   1067.15       PEAK FLOW RATE(CFS) =     788.84
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

********************************************************************************
  FLOW PROCESS FROM NODE LR020829.0 TO NODE LR020829.0 IS CODE =  10
--------------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
================================================================================

********************************************************************************
  FLOW PROCESS FROM NODE LR020764.0 TO NODE LR020764.0 IS CODE = 15.1
--------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
================================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20764.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1638.31    Tc(MIN.) =  28.72
  AREA-AVERAGED Fm(INCH/HR) =  0.48    Ybar = 0.53
  TOTAL AREA(ACRES) =    1696.39
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20764.00 = 21121.48 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE LR020764.0 TO NODE LR020764.0 IS CODE = 14.0
--------------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
================================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1638.31    Tc(MIN.) =  28.72
```



```
  AREA-AVERAGED Fm(INCH/HR) =  0.48    Ybar = 0.53
  TOTAL AREA(ACRES) =    1696.39
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20764.00 = 21121.48 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE LR020764.0 TO NODE LR020764.0 IS CODE =  12
--------------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
================================================================================

********************************************************************************
  FLOW PROCESS FROM NODE LR020764.0 TO NODE LR020829.0 IS CODE =  48
--------------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1510.00  DOWNSTREAM(FEET) =  1465.00
  FLOW LENGTH(FEET) =  1297.04   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  15.00   GIVEN BOX HEIGHT(FEET) =   5.00
  FLOWDEPTH IN BOX IS  3.22 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  33.95
  BOX-FLOW(CFS) =   1638.31
  BOX-FLOW TRAVEL TIME(MIN.) =   0.64    Tc(MIN.) =  29.35
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20829.00 = 22418.52 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE LR020829.0 TO NODE LR020829.0 IS CODE =  11
--------------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
================================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     1638.31    Tc(MIN.) =  29.35
  AREA-AVERAGED Fm(INCH/HR) =  0.48    Ybar = 0.53
  TOTAL AREA(ACRES) =    1696.39
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20829.00 = 22418.52 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =      788.84    Tc(MIN.) =  42.70
  AREA-AVERAGED Fm(INCH/HR) =  0.52    Ybar = 0.58
  TOTAL AREA(ACRES) =    1067.15
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20829.00 = 20545.90 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.64;6H= 2.29;24H= 4.86
  S-GRAPH: VALLEY(DEV.)= 92.0%;VALLEY(UNDEV.)/DESERT=  8.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.49; LAG(HR) = 0.39; Fm(INCH/HR) = 0.50; Ybar = 0.55
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.88; 30M = 0.88; 1HR = 0.88;
  3HR = 0.98; 6HR = 0.99; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   2763.54
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20829.00 = 22418.52 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0228; Lca/L=0.4,n=.0204; Lca/L=0.5,n=.0188;Lca/L=0.6,n=.0175
  TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     535.96
  PEAK FLOW RATE(CFS) =    2375.00
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR020829.0 TO NODE LR020829.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020829.0 TO NODE LR020852.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1465.00  DOWNSTREAM(FEET) =  1413.00
  FLOW LENGTH(FEET) =  2003.77   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  24.00   GIVEN BOX HEIGHT(FEET) =   5.00
  FLOWDEPTH IN BOX IS  3.15 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  31.43
  BOX-FLOW(CFS) =   2375.00
  BOX-FLOW TRAVEL TIME(MIN.) =   1.06    Tc(MIN.) =  30.42
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20852.00 = 24422.29 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020852.0 TO NODE LR020852.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =    2375.00    Tc(MIN.) =  30.42
  AREA-AVERAGED Fm(INCH/HR) =  0.50   Ybar = 0.55
  TOTAL AREA(ACRES) =    2763.54

****************************************************************************
  FLOW PROCESS FROM NODE LR020830.0 TO NODE LR020831.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   814.59
  ELEVATION DATA: UPSTREAM(FEET) =   1490.00  DOWNSTREAM(FEET) =   1475.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.868
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.836
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        6.12      0.75      0.60    56   13.37
  COMMERCIAL                 B        1.79      0.75      0.10    56    9.87
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.49
  SUBAREA RUNOFF(CFS) =     17.59
  TOTAL AREA(ACRES) =      7.91   PEAK FLOW RATE(CFS) =     17.59

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

****************************************************************************
```



```
  FLOW PROCESS FROM NODE LR020831.0 TO NODE LR020832.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1475.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1464.00
  FLOW LENGTH(FEET) =   301.44   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  72.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  72.0 INCH PIPE IS   7.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.62
  PIPE-FLOW(CFS) =     17.59
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.46    Tc(MIN.) =  10.33
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.759
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        7.31      0.75      0.60    56
  COMMERCIAL                 B        3.62      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.43
  SUBAREA AREA(ACRES) =   10.93      SUBAREA RUNOFF(CFS) =   23.95
  EFFECTIVE AREA(ACRES) =     18.84    AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.46
  TOTAL AREA(ACRES) =     18.84        PEAK FLOW RATE(CFS) =     41.00

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  6.0       STREET HALFWIDTH(FEET) = 18.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   23.41
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.44
    HALFSTREET FLOOD WIDTH(FEET) =   15.54
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.62
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.02
  LONGEST FLOWPATH FROM NODE  20830.00 TO NODE  20832.00 =  1116.03 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020832.0 TO NODE LR020833.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1464.00
```

```
  DOWNSTREAM NODE ELEVATION(FEET) =  1440.00
  FLOW LENGTH(FEET) =   991.27   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  72.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  72.0 INCH PIPE IS  12.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.96
  PIPE-FLOW(CFS) =     41.00
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.27    Tc(MIN.) =  11.60
  LONGEST FLOWPATH FROM NODE  20830.00 TO NODE  20833.00 =  2107.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020833.0 TO NODE LR020833.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  11.60
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.573
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       23.09      0.75      0.60    56
  COMMERCIAL                 B        9.26      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.46
  SUBAREA AREA(ACRES) =   32.35      SUBAREA RUNOFF(CFS) =   64.97
  EFFECTIVE AREA(ACRES) =     51.19   AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.46
  TOTAL AREA(ACRES) =     51.19       PEAK FLOW RATE(CFS) =     102.81

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

****************************************************************************
  FLOW PROCESS FROM NODE LR020833.0 TO NODE LR020852.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1440.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1413.00
  FLOW LENGTH(FEET) =  1064.34   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  72.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  72.0 INCH PIPE IS  19.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.24
  PIPE-FLOW(CFS) =    102.81
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.03    Tc(MIN.) =  12.63
  LONGEST FLOWPATH FROM NODE  20830.00 TO NODE  20852.00 =  3171.64 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020852.0 TO NODE LR020852.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  12.63
```



```
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.445
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.67      0.75      0.60    56
  MOBILE HOME PARK           B        3.54      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
  SUBAREA AREA(ACRES) =    6.21      SUBAREA RUNOFF(CFS) =   11.99
  EFFECTIVE AREA(ACRES) =     57.40   AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.45
  TOTAL AREA(ACRES) =     57.40       PEAK FLOW RATE(CFS) =     108.91

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

****************************************************************************
  FLOW PROCESS FROM NODE LR020852.0 TO NODE LR020852.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  12.63
  RAINFALL INTENSITY(INCH/HR) =   2.45
  AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.45
  EFFECTIVE STREAM AREA(ACRES) =    57.40
  TOTAL STREAM AREA(ACRES) =    57.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    108.91

****************************************************************************
  FLOW PROCESS FROM NODE LR020840.0 TO NODE LR020841.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   708.14
  ELEVATION DATA: UPSTREAM(FEET) =   1630.00  DOWNSTREAM(FEET) =   1600.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.898
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.241
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        3.00      0.75      0.50    56   10.11
  COMMERCIAL                 B        5.71      0.75      0.10    56    7.90
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.09      0.75      0.60    56   10.70
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.28
  SUBAREA RUNOFF(CFS) =     26.75
  TOTAL AREA(ACRES) =      9.80   PEAK FLOW RATE(CFS) =     26.75
```

```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

****************************************************************************
  FLOW PROCESS FROM NODE LR020841.0 TO NODE LR020842.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1600.00  DOWNSTREAM(FEET) =   1580.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   218.02   CHANNEL SLOPE =  0.0917
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     26.75
  FLOW VELOCITY(FEET/SEC.) =   4.60   FLOW DEPTH(FEET) =   0.62
  TRAVEL TIME(MIN.) =   0.79   Tc(MIN.) =   8.69
  LONGEST FLOWPATH FROM NODE  20840.00 TO NODE  20842.00 =   926.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020842.0 TO NODE LR020842.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =   8.69
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.061
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B        3.16      0.75      0.25    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        2.28      0.75      0.50    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.36      0.75      0.60    56
  COMMERCIAL                 B        1.50      0.75      0.10    56
  PUBLIC PARK                B        0.63      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.38
  SUBAREA AREA(ACRES) =    8.93      SUBAREA RUNOFF(CFS) =   22.29
  EFFECTIVE AREA(ACRES) =     18.73   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.33
  TOTAL AREA(ACRES) =     18.73       PEAK FLOW RATE(CFS) =      47.45

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

****************************************************************************
  FLOW PROCESS FROM NODE LR020842.0 TO NODE LR020843.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1580.00  DOWNSTREAM(FEET) =   1560.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   248.99   CHANNEL SLOPE =  0.0803
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     47.45
  FLOW VELOCITY(FEET/SEC.) =   5.06   FLOW DEPTH(FEET) =   0.79
  TRAVEL TIME(MIN.) =   0.82   Tc(MIN.) =   9.51
```



```
  LONGEST FLOWPATH FROM NODE  20840.00 TO NODE  20843.00 =  1175.15 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020843.0 TO NODE LR020843.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =   9.51
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.899
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B        4.09      0.75      0.25    56
  PUBLIC PARK                B        1.15      0.75      0.85    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.11      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.39
  SUBAREA AREA(ACRES) =    5.35      SUBAREA RUNOFF(CFS) =   12.57
  EFFECTIVE AREA(ACRES) =     24.08   AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.34
  TOTAL AREA(ACRES) =     24.08       PEAK FLOW RATE(CFS) =      57.30

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

****************************************************************************
  FLOW PROCESS FROM NODE LR020843.0 TO NODE LR020844.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1560.00  DOWNSTREAM(FEET) =   1557.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   185.64   CHANNEL SLOPE =  0.0162
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     57.30
  FLOW VELOCITY(FEET/SEC.) =   2.89   FLOW DEPTH(FEET) =   1.15
  TRAVEL TIME(MIN.) =   1.07   Tc(MIN.) =  10.58
  LONGEST FLOWPATH FROM NODE  20840.00 TO NODE  20844.00 =  1360.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020844.0 TO NODE LR020844.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  10.58
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.720
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B        2.82      0.75      0.25    56
  PUBLIC PARK                B        1.93      0.75      0.85    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.39      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =    5.14      SUBAREA RUNOFF(CFS) =   10.84
```

```
  EFFECTIVE AREA(ACRES) =     29.22   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.37
  TOTAL AREA(ACRES) =     29.22       PEAK FLOW RATE(CFS) =      64.25

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

****************************************************************************
  FLOW PROCESS FROM NODE LR020844.0 TO NODE LR020845.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1557.00  DOWNSTREAM(FEET) =   1555.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   193.68   CHANNEL SLOPE =  0.0103
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     64.25
  FLOW VELOCITY(FEET/SEC.) =   2.53   FLOW DEPTH(FEET) =   1.30
  TRAVEL TIME(MIN.) =   1.28   Tc(MIN.) =  11.86
  LONGEST FLOWPATH FROM NODE  20840.00 TO NODE  20845.00 =  1554.47 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020845.0 TO NODE LR020845.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  11.86
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.540
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B        0.75      0.75      0.25    56
  PUBLIC PARK                B        1.88      0.75      0.85    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.24      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA AREA(ACRES) =    2.87      SUBAREA RUNOFF(CFS) =    5.26
  EFFECTIVE AREA(ACRES) =     32.09   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.40
  TOTAL AREA(ACRES) =     32.09       PEAK FLOW RATE(CFS) =      64.78

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

****************************************************************************
  FLOW PROCESS FROM NODE LR020845.0 TO NODE LR020846.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1555.00  DOWNSTREAM(FEET) =   1552.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   263.74   CHANNEL SLOPE =  0.0114
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     64.78
  FLOW VELOCITY(FEET/SEC.) =   2.62   FLOW DEPTH(FEET) =   1.28
```



```
  TRAVEL TIME(MIN.) =   1.68   Tc(MIN.) =  13.53
  LONGEST FLOWPATH FROM NODE  20840.00 TO NODE  20846.00 =  1818.21 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020846.0 TO NODE LR020846.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  13.53
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.346
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B        0.82      0.75      0.25    56
  PUBLIC PARK                B        2.06      0.75      0.85    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.10      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    2.98      SUBAREA RUNOFF(CFS) =    4.93
  EFFECTIVE AREA(ACRES) =     35.07   AREA-AVERAGED Fm(INCH/HR) =  0.31
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.42
  TOTAL AREA(ACRES) =     35.07       PEAK FLOW RATE(CFS) =      64.78
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

****************************************************************************
  FLOW PROCESS FROM NODE LR020846.0 TO NODE LR020847.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1552.00  DOWNSTREAM(FEET) =   1550.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   185.20   CHANNEL SLOPE =  0.0108
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     64.78
  FLOW VELOCITY(FEET/SEC.) =   2.56   FLOW DEPTH(FEET) =   1.30
  TRAVEL TIME(MIN.) =   1.21   Tc(MIN.) =  14.74
  LONGEST FLOWPATH FROM NODE  20840.00 TO NODE  20847.00 =  2003.41 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020847.0 TO NODE LR020847.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  14.74
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.229
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B        2.48      0.75      0.25    56
  PUBLIC PARK                B        2.79      0.75      0.85    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.16      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
```

```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.57
  SUBAREA AREA(ACRES) =    5.43      SUBAREA RUNOFF(CFS) =    8.81
  EFFECTIVE AREA(ACRES) =     40.50   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.44
  TOTAL AREA(ACRES) =     40.50       PEAK FLOW RATE(CFS) =      69.23

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

****************************************************************************
  FLOW PROCESS FROM NODE LR020847.0 TO NODE LR020848.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1550.00  DOWNSTREAM(FEET) =   1540.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   371.70   CHANNEL SLOPE =  0.0269
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     69.23
  FLOW VELOCITY(FEET/SEC.) =   3.69   FLOW DEPTH(FEET) =   1.12
  TRAVEL TIME(MIN.) =   1.68   Tc(MIN.) =  16.42
  LONGEST FLOWPATH FROM NODE  20840.00 TO NODE  20848.00 =  2375.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020848.0 TO NODE LR020848.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  16.42
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.089
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B        0.62      0.75      0.25    56
  PUBLIC PARK                B        5.12      0.75      0.85    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.12      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.78
  SUBAREA AREA(ACRES) =    5.86      SUBAREA RUNOFF(CFS) =    7.93
  EFFECTIVE AREA(ACRES) =     46.36   AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.48
  TOTAL AREA(ACRES) =     46.36       PEAK FLOW RATE(CFS) =      72.07

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

****************************************************************************
  FLOW PROCESS FROM NODE LR020848.0 TO NODE LR020849.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1540.00  DOWNSTREAM(FEET) =   1510.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   324.67   CHANNEL SLOPE =  0.0924
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
```



```
  CHANNEL FLOW THRU SUBAREA(CFS) =     72.07
  FLOW VELOCITY(FEET/SEC.) =   5.89   FLOW DEPTH(FEET) =   0.90
  TRAVEL TIME(MIN.) =   0.92   Tc(MIN.) =  17.34
  LONGEST FLOWPATH FROM NODE  20840.00 TO NODE  20849.00 =  2699.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020849.0 TO NODE LR020849.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.34
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.022
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        1.44      0.75      0.85    56
  MOBILE HOME PARK           B        0.53      0.75      0.25    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.02      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    1.99      SUBAREA RUNOFF(CFS) =    2.70
  EFFECTIVE AREA(ACRES) =     48.35   AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.49
  TOTAL AREA(ACRES) =     48.35       PEAK FLOW RATE(CFS) =      72.07
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

****************************************************************************
  FLOW PROCESS FROM NODE LR020849.0 TO NODE LR020850.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1510.00  DOWNSTREAM ELEVATION(FEET) = 1497.00
  STREET LENGTH(FEET) =   288.19   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.72

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      85.01
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.60
    HALFSTREET FLOOD WIDTH(FEET) =   23.08
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.47
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.49
  STREET FLOW TRAVEL TIME(MIN.) =   0.64   Tc(MIN.) =  17.98
```

```
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.978
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.94      0.75      0.60    56
 MOBILE HOME PARK           B        9.09      0.75      0.25    56
 AGRICULTURAL FAIR COVER
 "ORCHARDS"                 B        5.99      0.63      1.00    65
 PUBLIC PARK                B        1.08      0.75      0.85    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.68
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.57
 SUBAREA AREA(ACRES) =   18.10      SUBAREA RUNOFF(CFS) =   25.89
 EFFECTIVE AREA(ACRES) =     66.45    AREA-AVERAGED Fm(INCH/HR) =  0.37
 AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.51
 TOTAL AREA(ACRES) =     66.45        PEAK FLOW RATE(CFS) =      95.96

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.62   HALFSTREET FLOOD WIDTH(FEET) =  24.12
 FLOW VELOCITY(FEET/SEC.) =  7.76   DEPTH*VELOCITY(FT*FT/SEC.) =   4.83
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  288.2 FT WITH ELEVATION-DROP =  13.0 FT, IS   55.8 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20850.00
 LONGEST FLOWPATH FROM NODE  20840.00 TO NODE  20850.00 =  2987.97 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020850.0 TO NODE LR020851.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1497.00  DOWNSTREAM ELEVATION(FEET) = 1435.00
 STREET LENGTH(FEET) =  2619.33   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.86

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     147.81
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.79
   HALFSTREET FLOOD WIDTH(FEET) =   32.30
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.85
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.38
 STREET FLOW TRAVEL TIME(MIN.) =   6.38   Tc(MIN.) =  24.36
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.649
 SUBAREA LOSS RATE DATA(AMC  II):
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  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       82.38      0.75      0.60    56
 MOBILE HOME PARK           B       10.87      0.75      0.25    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.56
 SUBAREA AREA(ACRES) =   93.25      SUBAREA RUNOFF(CFS) =  103.26
 EFFECTIVE AREA(ACRES) =    159.70    AREA-AVERAGED Fm(INCH/HR) =  0.40
 AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.54
 TOTAL AREA(ACRES) =    159.70        PEAK FLOW RATE(CFS) =     179.53

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.84   HALFSTREET FLOOD WIDTH(FEET) =  34.86
 FLOW VELOCITY(FEET/SEC.) =  7.17   DEPTH*VELOCITY(FT*FT/SEC.) =   6.00
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L = 2619.3 FT WITH ELEVATION-DROP =  62.0 FT, IS  139.4 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20851.00
 LONGEST FLOWPATH FROM NODE  20840.00 TO NODE  20851.00 =  5607.30 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020851.0 TO NODE LR020852.0 IS CODE =  42
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1435.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1413.00
 FLOW LENGTH(FEET) =  1025.18   MANNING'S N =  0.013

 USER SPECIFIED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
 DEPTH OF FLOW IN  54.0 INCH PIPE IS  30.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  19.10
 PIPE-FLOW(CFS) =    179.53
 *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
 PIPEFLOW TRAVEL TIME(MIN.) =   0.89    Tc(MIN.) =  25.26
 LONGEST FLOWPATH FROM NODE  20840.00 TO NODE  20852.00 =  6632.48 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020852.0 TO NODE LR020852.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  25.26
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.613
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       12.28      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =   12.28      SUBAREA RUNOFF(CFS) =   12.87
 EFFECTIVE AREA(ACRES) =    171.98   AREA-AVERAGED Fm(INCH/HR) =  0.40
 AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.54
```

```
  TOTAL AREA(ACRES) =    171.98       PEAK FLOW RATE(CFS) =     187.33

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.28; 24HR = 4.69

****************************************************************************
  FLOW PROCESS FROM NODE LR020852.0 TO NODE LR020852.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =  25.26
  RAINFALL INTENSITY(INCH/HR) =   1.61
  AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.74
  AREA-AVERAGED Ap =  0.54
  EFFECTIVE STREAM AREA(ACRES) =   171.98
  TOTAL STREAM AREA(ACRES) =   171.98
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    187.33
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1      2375.00   30.42     2763.54  LR020620.0
     2       108.91   12.63       57.40  LR020830.0
     3       187.33   25.26      171.98  LR020840.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.64;6H= 2.29;24H= 4.85
  S-GRAPH: VALLEY(DEV.)= 92.4%;VALLEY(UNDEV.)/DESERT=  7.6%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.51; LAG(HR) = 0.41; Fm(INCH/HR) = 0.49; Ybar = 0.54
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.87; 30M = 0.87; 1HR = 0.87;
  3HR = 0.98; 6HR = 0.99; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   2992.92
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20852.00 = 24422.29 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0221; Lca/L=0.4,n=.0198; Lca/L=0.5,n=.0182;Lca/L=0.6,n=.0170
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     586.93
  PEAK FLOW RATE(CFS) =   2496.69

****************************************************************************
  FLOW PROCESS FROM NODE LR020852.0 TO NODE LR020852.0 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20852.dna
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =   2992.92  TC(MIN.) =     30.42
  AREA-AVERAGED Fm(INCH/HR)=  0.49   Ybar =  0.54
  PEAK FLOW RATE(CFS)   =   2496.69
============================================================================
============================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                          San Bernardino County
                    Transportation/ Flood Control Department

                          Water Resources Division

 ************************ DESCRIPTION OF STUDY *************************
* LR 0209ZZ FILE                                                       *
*  25-YEAR STORM                                                       *
*                                                                      *
 ************************************************************************

  FILE NAME: LR0209ZZ.Z25
  TIME/DATE OF STUDY: 11:26 02/23/2006
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 0.9600

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
```



```
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


************************************************************************
  FLOW PROCESS FROM NODE LR020900.0 TO NODE LR020901.0 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   751.64
  ELEVATION DATA: UPSTREAM(FEET) =   1840.00  DOWNSTREAM(FEET) =   1798.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.372
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.752
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.85      0.75      0.90    56   12.26
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.85      0.75      0.60    56   10.37
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        8.78      0.75      0.70    56   11.03
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.71
  SUBAREA RUNOFF(CFS) =     20.96
  TOTAL AREA(ACRES) =     10.48   PEAK FLOW RATE(CFS) =     20.96

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

************************************************************************
  FLOW PROCESS FROM NODE LR020901.0 TO NODE LR020902.0 IS CODE =  63
------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
========================================================================
  UPSTREAM ELEVATION(FEET) = 1798.00  DOWNSTREAM ELEVATION(FEET) = 1770.00
```

```
  STREET LENGTH(FEET) =   427.68   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.65

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      25.82
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.41
    HALFSTREET FLOOD WIDTH(FEET) =   14.37
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.92
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.45
  STREET FLOW TRAVEL TIME(MIN.) =   1.20   Tc(MIN.) =  11.58
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.576
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.43      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.53      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.46      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.78
  SUBAREA AREA(ACRES) =    5.42      SUBAREA RUNOFF(CFS) =    9.72
  EFFECTIVE AREA(ACRES) =     15.90    AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =     15.90        PEAK FLOW RATE(CFS) =      29.03

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.43   HALFSTREET FLOOD WIDTH(FEET) =  15.07
  FLOW VELOCITY(FEET/SEC.) =  6.07   DEPTH*VELOCITY(FT*FT/SEC.) =   2.60
  LONGEST FLOWPATH FROM NODE  20900.00 TO NODE  20902.00 =  1179.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020902.0 TO NODE LR020903.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1770.00  DOWNSTREAM ELEVATION(FEET) = 1758.00
  STREET LENGTH(FEET) =   465.31   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
```



```
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      33.22
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.50
    HALFSTREET FLOOD WIDTH(FEET) =   18.20
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.52
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.28
  STREET FLOW TRAVEL TIME(MIN.) =   1.72   Tc(MIN.) =  13.29
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.371
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.12      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.54      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.53      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.77
  SUBAREA AREA(ACRES) =    5.19      SUBAREA RUNOFF(CFS) =    8.38
  EFFECTIVE AREA(ACRES) =     21.09    AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.74
  TOTAL AREA(ACRES) =     21.09        PEAK FLOW RATE(CFS) =      34.47

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.51   HALFSTREET FLOOD WIDTH(FEET) =  18.44
  FLOW VELOCITY(FEET/SEC.) =  4.58   DEPTH*VELOCITY(FT*FT/SEC.) =   2.33
  LONGEST FLOWPATH FROM NODE  20900.00 TO NODE  20903.00 =  1644.63 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020903.0 TO NODE LR020904.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1758.00  DOWNSTREAM ELEVATION(FEET) = 1750.00
  STREET LENGTH(FEET) =   486.20   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
```

```
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      50.49
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.60
    HALFSTREET FLOOD WIDTH(FEET) =   22.90
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.50
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.69
  STREET FLOW TRAVEL TIME(MIN.) =   1.80   Tc(MIN.) =  15.09
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.197
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        3.95      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.03      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       15.54      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.73
  SUBAREA AREA(ACRES) =   21.52      SUBAREA RUNOFF(CFS) =   32.02
  EFFECTIVE AREA(ACRES) =     42.61    AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =     42.61        PEAK FLOW RATE(CFS) =      63.19

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.64   HALFSTREET FLOOD WIDTH(FEET) =  24.91
  FLOW VELOCITY(FEET/SEC.) =  4.81   DEPTH*VELOCITY(FT*FT/SEC.) =   3.07
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  486.2 FT WITH ELEVATION-DROP =   8.0 FT, IS   40.6 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20904.00
  LONGEST FLOWPATH FROM NODE  20900.00 TO NODE  20904.00 =  2130.83 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020904.0 TO NODE LR020905.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1750.00  DOWNSTREAM ELEVATION(FEET) = 1715.00
  STREET LENGTH(FEET) =   660.51   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.69
```



```
    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      79.58
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.58
    HALFSTREET FLOOD WIDTH(FEET) =   21.86
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.73
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.46
  STREET FLOW TRAVEL TIME(MIN.) =   1.42   Tc(MIN.) =  16.52
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.082
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        8.61      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.14      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       13.33      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.76
  SUBAREA AREA(ACRES) =   24.08      SUBAREA RUNOFF(CFS) =   32.75
  EFFECTIVE AREA(ACRES) =     66.69    AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.74
  TOTAL AREA(ACRES) =     66.69        PEAK FLOW RATE(CFS) =      91.51

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.60   HALFSTREET FLOOD WIDTH(FEET) =  23.02
  FLOW VELOCITY(FEET/SEC.) =  8.08   DEPTH*VELOCITY(FT*FT/SEC.) =   4.85
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  660.5 FT WITH ELEVATION-DROP =  35.0 FT, IS   48.8 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20905.00
  LONGEST FLOWPATH FROM NODE  20900.00 TO NODE  20905.00 =  2791.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020905.0 TO NODE LR020906.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1715.00  DOWNSTREAM ELEVATION(FEET) = 1670.00
  STREET LENGTH(FEET) =  1223.70   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.76

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     101.76
    ***STREET FLOWING FULL***
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    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.65
    HALFSTREET FLOOD WIDTH(FEET) =   25.64
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.33
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.79
  STREET FLOW TRAVEL TIME(MIN.) =   2.78   Tc(MIN.) =  19.30
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.896
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        7.55      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.61      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        8.18      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.78
  SUBAREA AREA(ACRES) =   17.34      SUBAREA RUNOFF(CFS) =   20.51
  EFFECTIVE AREA(ACRES) =     84.03    AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.75
  TOTAL AREA(ACRES) =     84.03        PEAK FLOW RATE(CFS) =     100.87

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.65   HALFSTREET FLOOD WIDTH(FEET) =  25.58
  FLOW VELOCITY(FEET/SEC.) =  7.30   DEPTH*VELOCITY(FT*FT/SEC.) =   4.76
  LONGEST FLOWPATH FROM NODE  20900.00 TO NODE  20906.00 =  4015.04 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020906.0 TO NODE LR020920.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1670.00  DOWNSTREAM ELEVATION(FEET) = 1600.00
  STREET LENGTH(FEET) =  1513.04   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.71

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     110.69
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.65
    HALFSTREET FLOOD WIDTH(FEET) =   25.34
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.16
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.27
```



```
  STREET FLOW TRAVEL TIME(MIN.) =   3.09   Tc(MIN.) =  22.39
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.734
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.66      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        8.47      0.75      0.70    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        0.16      0.63      1.00    65
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        7.50      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.77
  SUBAREA AREA(ACRES) =   18.79      SUBAREA RUNOFF(CFS) =   19.63
  EFFECTIVE AREA(ACRES) =    102.82    AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.75
  TOTAL AREA(ACRES) =    102.82        PEAK FLOW RATE(CFS) =     108.27

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.64   HALFSTREET FLOOD WIDTH(FEET) =  25.16
  FLOW VELOCITY(FEET/SEC.) =  8.09   DEPTH*VELOCITY(FT*FT/SEC.) =   5.20
  LONGEST FLOWPATH FROM NODE  20900.00 TO NODE  20920.00 =  5528.08 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020920.0 TO NODE LR020920.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  22.39
  RAINFALL INTENSITY(INCH/HR) =   1.73
  AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.75
  EFFECTIVE STREAM AREA(ACRES) =   102.82
  TOTAL STREAM AREA(ACRES) =   102.82
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    108.27

****************************************************************************
  FLOW PROCESS FROM NODE LR020910.0 TO NODE LR020911.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   679.60
  ELEVATION DATA: UPSTREAM(FEET) =   1825.00  DOWNSTREAM(FEET) =   1795.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.443
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.741
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
```

```
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.59      0.75      0.60    56   10.44
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        4.98      0.75      0.90    56   12.34
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.87
  SUBAREA RUNOFF(CFS) =     10.48
  TOTAL AREA(ACRES) =      5.57   PEAK FLOW RATE(CFS) =     10.48

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

****************************************************************************
  FLOW PROCESS FROM NODE LR020911.0 TO NODE LR020912.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1795.00  DOWNSTREAM(FEET) =   1780.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   216.45   CHANNEL SLOPE =  0.0693
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  25.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     10.48
  FLOW VELOCITY(FEET/SEC.) =   2.84   FLOW DEPTH(FEET) =   0.38
  TRAVEL TIME(MIN.) =   1.27   Tc(MIN.) =  11.71
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20912.00 =   896.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020912.0 TO NODE LR020912.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  11.71
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.558
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.20      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        5.94      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.89
  SUBAREA AREA(ACRES) =     6.14      SUBAREA RUNOFF(CFS) =   10.46
  EFFECTIVE AREA(ACRES) =     11.71   AREA-AVERAGED Fm(INCH/HR) =  0.66
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.88
  TOTAL AREA(ACRES) =     11.71       PEAK FLOW RATE(CFS) =      20.03

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

****************************************************************************
  FLOW PROCESS FROM NODE LR020912.0 TO NODE LR020913.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
```



```
  ELEVATION DATA: UPSTREAM(FEET) =   1780.00  DOWNSTREAM(FEET) =   1770.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   292.78   CHANNEL SLOPE =  0.0342
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  25.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     20.03
  FLOW VELOCITY(FEET/SEC.) =   2.61   FLOW DEPTH(FEET) =   0.55
  TRAVEL TIME(MIN.) =   1.87   Tc(MIN.) =  13.58
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20913.00 =  1188.83 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020913.0 TO NODE LR020913.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  13.58
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.341
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.69      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        9.60      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.88
  SUBAREA AREA(ACRES) =    10.29      SUBAREA RUNOFF(CFS) =   15.58
  EFFECTIVE AREA(ACRES) =     22.00   AREA-AVERAGED Fm(INCH/HR) =  0.66
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.88
  TOTAL AREA(ACRES) =     22.00       PEAK FLOW RATE(CFS) =      33.32

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

****************************************************************************
  FLOW PROCESS FROM NODE LR020913.0 TO NODE LR020914.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1770.00  DOWNSTREAM(FEET) =   1740.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   493.77   CHANNEL SLOPE =  0.0608
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     33.32
  FLOW VELOCITY(FEET/SEC.) =   3.11   FLOW DEPTH(FEET) =   0.46
  TRAVEL TIME(MIN.) =   2.64   Tc(MIN.) =  16.23
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20914.00 =  1682.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020914.0 TO NODE LR020914.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  16.23
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.104
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        8.27      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.58      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.88
  SUBAREA AREA(ACRES) =    8.85      SUBAREA RUNOFF(CFS) =   11.51
  EFFECTIVE AREA(ACRES) =     30.85   AREA-AVERAGED Fm(INCH/HR) =  0.66
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.88
  TOTAL AREA(ACRES) =     30.85       PEAK FLOW RATE(CFS) =      40.14

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

****************************************************************************
  FLOW PROCESS FROM NODE LR020914.0 TO NODE LR020915.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1740.00  DOWNSTREAM(FEET) =   1720.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   642.16   CHANNEL SLOPE =  0.0311
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     40.14
  FLOW VELOCITY(FEET/SEC.) =   2.49   FLOW DEPTH(FEET) =   0.57
  TRAVEL TIME(MIN.) =   4.29   Tc(MIN.) =  20.52
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20915.00 =  2324.76 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020915.0 TO NODE LR020915.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  20.52
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.828
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        3.54      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.59      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.86
  SUBAREA AREA(ACRES) =    4.13      SUBAREA RUNOFF(CFS) =    4.41
  EFFECTIVE AREA(ACRES) =     34.98   AREA-AVERAGED Fm(INCH/HR) =  0.66
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.88
  TOTAL AREA(ACRES) =     34.98       PEAK FLOW RATE(CFS) =      40.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

****************************************************************************
  FLOW PROCESS FROM NODE LR020915.0 TO NODE LR020916.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
```



```
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1720.00  DOWNSTREAM ELEVATION(FEET) = 1700.00
  STREET LENGTH(FEET) =   683.96   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.81

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      50.92
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.55
    HALFSTREET FLOOD WIDTH(FEET) =   20.70
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.48
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.03
  STREET FLOW TRAVEL TIME(MIN.) =   2.08   Tc(MIN.) =  22.60
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.725
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.86      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       20.51      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.88
  SUBAREA AREA(ACRES) =   22.37      SUBAREA RUNOFF(CFS) =   21.54
  EFFECTIVE AREA(ACRES) =     57.35    AREA-AVERAGED Fm(INCH/HR) =  0.66
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.88
  TOTAL AREA(ACRES) =     57.35       PEAK FLOW RATE(CFS) =      55.18

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.57   HALFSTREET FLOOD WIDTH(FEET) =  21.31
  FLOW VELOCITY(FEET/SEC.) =  5.62   DEPTH*VELOCITY(FT*FT/SEC.) =   3.18
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  684.0 FT WITH ELEVATION-DROP =  20.0 FT, IS   39.3 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20916.00
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20916.00 =  3008.72 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020916.0 TO NODE LR020917.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1700.00  DOWNSTREAM ELEVATION(FEET) = 1672.00
  STREET LENGTH(FEET) =   576.79   CURB HEIGHT(INCHES) =  6.0
```

```
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      64.21
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.55
    HALFSTREET FLOOD WIDTH(FEET) =   20.52
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.02
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.86
  STREET FLOW TRAVEL TIME(MIN.) =   1.37   Tc(MIN.) =  23.97
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.665
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.43      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       16.04      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.85
  SUBAREA AREA(ACRES) =   19.47      SUBAREA RUNOFF(CFS) =   18.07
  EFFECTIVE AREA(ACRES) =     76.82    AREA-AVERAGED Fm(INCH/HR) =  0.65
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =     76.82        PEAK FLOW RATE(CFS) =      70.16

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.56   HALFSTREET FLOOD WIDTH(FEET) =  21.19
  FLOW VELOCITY(FEET/SEC.) =  7.23   DEPTH*VELOCITY(FT*FT/SEC.) =   4.07
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20917.00 =  3585.51 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020917.0 TO NODE LR020918.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1672.00  DOWNSTREAM ELEVATION(FEET) = 1655.00
  STREET LENGTH(FEET) =   727.03   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
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  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.89

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      78.97
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.69
    HALFSTREET FLOOD WIDTH(FEET) =   27.40
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.34
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.71
  STREET FLOW TRAVEL TIME(MIN.) =   2.27   Tc(MIN.) =  26.24
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.577
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       12.63      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        5.91      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   18.54      SUBAREA RUNOFF(CFS) =   17.63
  EFFECTIVE AREA(ACRES) =     95.36    AREA-AVERAGED Fm(INCH/HR) =  0.62
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     95.36        PEAK FLOW RATE(CFS) =      81.71

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.70   HALFSTREET FLOOD WIDTH(FEET) =  27.71
  FLOW VELOCITY(FEET/SEC.) =  5.40   DEPTH*VELOCITY(FT*FT/SEC.) =   3.78
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20918.00 =  4312.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020918.0 TO NODE LR020919.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1655.00  DOWNSTREAM ELEVATION(FEET) = 1640.00
  STREET LENGTH(FEET) =   577.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.86

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      86.52
    ***STREET FLOWING FULL***
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  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.70
  HALFSTREET FLOOD WIDTH(FEET) =   27.71
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.72
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.01
 STREET FLOW TRAVEL TIME(MIN.) =   1.68   Tc(MIN.) =  27.92
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.519
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        9.91      0.75      0.60    56
 AGRICULTURAL FAIR COVER
 "ORCHARDS"                 B        0.10      0.63      1.00    65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =   10.01      SUBAREA RUNOFF(CFS) =    9.63
 EFFECTIVE AREA(ACRES) =    105.37    AREA-AVERAGED Fm(INCH/HR) =  0.61
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.81
 TOTAL AREA(ACRES) =    105.37        PEAK FLOW RATE(CFS) =      86.38

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.70   HALFSTREET FLOOD WIDTH(FEET) =  27.71
 FLOW VELOCITY(FEET/SEC.) =  5.71   DEPTH*VELOCITY(FT*FT/SEC.) =   4.00
 LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20919.00 =  4890.04 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020919.0 TO NODE LR020920.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1640.00  DOWNSTREAM ELEVATION(FEET) = 1600.00
 STREET LENGTH(FEET) =  1346.52   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     103.15
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.72
   HALFSTREET FLOOD WIDTH(FEET) =   28.69
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.35
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.58
 STREET FLOW TRAVEL TIME(MIN.) =   3.53   Tc(MIN.) =  31.46
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.414
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 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        4.53      0.75      0.60    56
 AGRICULTURAL FAIR COVER
 "ORCHARDS"                 B       10.24      0.63      1.00    65
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B       33.53      0.75      0.90    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.72
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.89
 SUBAREA AREA(ACRES) =   48.30      SUBAREA RUNOFF(CFS) =   33.53
 EFFECTIVE AREA(ACRES) =    153.67    AREA-AVERAGED Fm(INCH/HR) =  0.62
 AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.84
 TOTAL AREA(ACRES) =    153.67        PEAK FLOW RATE(CFS) =     109.97

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.73   HALFSTREET FLOOD WIDTH(FEET) =  29.30
 FLOW VELOCITY(FEET/SEC.) =  6.49   DEPTH*VELOCITY(FT*FT/SEC.) =   4.76
 LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20920.00 =  6236.56 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020920.0 TO NODE LR020920.0 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  31.46
 RAINFALL INTENSITY(INCH/HR) =   1.41
 AREA-AVERAGED Fm(INCH/HR) =  0.62
 AREA-AVERAGED Fp(INCH/HR) =  0.74
 AREA-AVERAGED Ap =  0.84
 EFFECTIVE STREAM AREA(ACRES) =   153.67
 TOTAL STREAM AREA(ACRES) =   153.67
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    109.97

 ** CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    108.27  22.39    1.734  0.75( 0.56) 0.75   102.8 LR020900.0
     2    109.97  31.46    1.414  0.74( 0.62) 0.84   153.7 LR020910.0

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    218.05  22.39    1.734  0.74( 0.59) 0.80   212.2 LR020900.0
     2    188.63  31.46    1.414  0.74( 0.60) 0.80   256.5 LR020910.0

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    218.05    Tc(MIN.) =    22.39
```

```
  EFFECTIVE AREA(ACRES) =   212.21   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =    256.49
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20920.00 =  6236.56 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020920.0 TO NODE LR020921.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1600.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1580.00
  FLOW LENGTH(FEET) =   766.09   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  57.0 INCH PIPE IS  31.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  21.60
  PIPE-FLOW(CFS) =    218.05
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.63    Tc(MIN.) =  23.02
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.706
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        0.05      0.63      1.00    65
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       11.48      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       56.14      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   67.67      SUBAREA RUNOFF(CFS) =   72.76
  EFFECTIVE AREA(ACRES) =    279.88    AREA-AVERAGED Fm(INCH/HR) =  0.57
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.77
  TOTAL AREA(ACRES) =    324.16        PEAK FLOW RATE(CFS) =    285.35

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 26.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   67.30
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.66
    HALFSTREET FLOOD WIDTH(FEET) =   24.86
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.28
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.46
```



```
  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    285.35  23.02    1.706  0.74( 0.57) 0.77   279.9 LR020900.0
      2    238.61  32.11    1.397  0.74( 0.58) 0.78   324.2 LR020910.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    285.35  Tc(MIN.) =  23.02
  AREA-AVERAGED Fm(INCH/HR) =  0.57  AREA-AVERAGED Fp(INCH/HR) =  0.74
  AREA-AVERAGED Ap =  0.77  EFFECTIVE AREA(ACRES) =    279.88
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20921.00 =  7002.65 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020921.0 TO NODE LR020922.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1580.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1560.00
  FLOW LENGTH(FEET) =  1453.35   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  75.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  75.0 INCH PIPE IS  38.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.19
  PIPE-FLOW(CFS) =    285.35
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.33    Tc(MIN.) =  24.35
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20922.00 =  8456.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020922.0 TO NODE LR020922.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  24.35
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.649
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       10.56      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       31.42      0.75      0.70    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B       17.53      0.75      0.50    56
  MOBILE HOME PARK           B       16.71      0.75      0.25    56
  COMMERCIAL                 B        2.07      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.53
  SUBAREA AREA(ACRES) =   78.29      SUBAREA RUNOFF(CFS) =   88.27
  EFFECTIVE AREA(ACRES) =    358.17   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.82
  TOTAL AREA(ACRES) =    402.45       PEAK FLOW RATE(CFS) =     334.69

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62
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 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    358.26  24.44    1.646  0.74( 0.53) 0.72   358.2 LR020900.0
     2    295.62  33.59    1.360  0.74( 0.54) 0.73   402.4 LR020910.0
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    358.26  Tc(MIN.) =  24.44
 AREA-AVERAGED Fm(INCH/HR) =  0.53  AREA-AVERAGED Fp(INCH/HR) =  0.74
 AREA-AVERAGED Ap =  0.72  EFFECTIVE AREA(ACRES) =    358.17

****************************************************************************
 FLOW PROCESS FROM NODE LR020922.0 TO NODE LR020923.0 IS CODE =  33
----------------------------------------------------------------------------
 >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
 >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1560.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1490.00
 FLOW LENGTH(FEET) =  1505.73   MANNING'S N =  0.013

 USER SPECIFIED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
 DEPTH OF FLOW IN  60.0 INCH PIPE IS  34.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  30.32
 PIPE-FLOW(CFS) =    358.26
 *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
 PIPEFLOW TRAVEL TIME(MIN.) =   0.88    Tc(MIN.) =  25.32
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.611
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        6.04      0.75      0.50    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       30.00      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.58
 SUBAREA AREA(ACRES) =   36.04      SUBAREA RUNOFF(CFS) =   38.10
 EFFECTIVE AREA(ACRES) =    394.21    AREA-AVERAGED Fm(INCH/HR) =  0.53
 AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.71
 TOTAL AREA(ACRES) =    438.49        PEAK FLOW RATE(CFS) =    385.20

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

 STREET CROSS-SECTION INFORMATION:
 CURB HEIGHT(INCHES) =  6.0       STREET HALFWIDTH(FEET) = 18.00
 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.69
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   26.94
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.44
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   HALFSTREET FLOOD WIDTH(FEET) =   15.70
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.22
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.30

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    385.20  25.32    1.611  0.74( 0.53) 0.71   394.2 LR020900.0
     2    316.93  34.51    1.338  0.74( 0.53) 0.72   438.5 LR020910.0
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    385.20  Tc(MIN.) =  25.32
 AREA-AVERAGED Fm(INCH/HR) =  0.53  AREA-AVERAGED Fp(INCH/HR) =  0.74
 AREA-AVERAGED Ap =  0.71  EFFECTIVE AREA(ACRES) =    394.21
 LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20923.00 =  9961.73 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020923.0 TO NODE LR020924.0 IS CODE =  48
----------------------------------------------------------------------------
 >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1490.00  DOWNSTREAM(FEET) =  1440.00
 FLOW LENGTH(FEET) =  1358.44   MANNING'S N =  0.014
 GIVEN BOX BASEWIDTH(FEET) =   4.00   GIVEN BOX HEIGHT(FEET) =   4.00
 *GIVEN BOX HEIGHT(FEET) =   4.00   ESTIMATED BOX BASEWIDTH(FEET) =    4.83
 ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  19.93
 BOX-FLOW(CFS) =    385.20
 BOX-FLOW TRAVEL TIME(MIN.) =   1.14    Tc(MIN.) =  26.45
 LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20924.00 = 11320.17 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020924.0 TO NODE LR020924.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  26.45
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.569
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        6.19      0.75      0.50    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       35.81      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.59
 SUBAREA AREA(ACRES) =   42.00      SUBAREA RUNOFF(CFS) =   42.77
 EFFECTIVE AREA(ACRES) =    436.21   AREA-AVERAGED Fm(INCH/HR) =  0.52
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
 TOTAL AREA(ACRES) =    480.49        PEAK FLOW RATE(CFS) =     413.11

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

****************************************************************************
 FLOW PROCESS FROM NODE LR020924.0 TO NODE LR020939.0 IS CODE =  48
----------------------------------------------------------------------------
 >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1440.00  DOWNSTREAM(FEET) =  1409.00
  FLOW LENGTH(FEET) =  1153.84   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   4.00   GIVEN BOX HEIGHT(FEET) =   4.00
  *GIVEN BOX HEIGHT(FEET) =   4.00   ESTIMATED BOX BASEWIDTH(FEET) =    5.77
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  17.91
  BOX-FLOW(CFS) =    413.11
  BOX-FLOW TRAVEL TIME(MIN.) =   1.07    Tc(MIN.) =  27.53
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20939.00 = 12474.01 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020939.0 TO NODE LR020939.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  27.53
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.532
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        2.86      0.75      0.50    56
  SCHOOL                     B        0.48      0.75      0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       11.63      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.58
  SUBAREA AREA(ACRES) =   14.97      SUBAREA RUNOFF(CFS) =   14.79
  EFFECTIVE AREA(ACRES) =    451.18   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =    495.46       PEAK FLOW RATE(CFS) =     413.37

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

****************************************************************************
  FLOW PROCESS FROM NODE LR020939.0 TO NODE LR020939.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  27.53
  RAINFALL INTENSITY(INCH/HR) =   1.53
  AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.69
  EFFECTIVE STREAM AREA(ACRES) =   451.18
  TOTAL STREAM AREA(ACRES) =   495.46
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    413.37

****************************************************************************
  FLOW PROCESS FROM NODE LR020930.0 TO NODE LR020931.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
```



```
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   975.69
  ELEVATION DATA: UPSTREAM(FEET) =   1650.00  DOWNSTREAM(FEET) =   1625.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.455
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.354
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        8.68      0.75      0.60    56   13.46
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     14.88
  TOTAL AREA(ACRES) =      8.68   PEAK FLOW RATE(CFS) =     14.88

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

****************************************************************************
  FLOW PROCESS FROM NODE LR020931.0 TO NODE LR020932.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1625.00  DOWNSTREAM ELEVATION(FEET) = 1610.00
  STREET LENGTH(FEET) =   500.18   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.80

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      16.11
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.40
    HALFSTREET FLOOD WIDTH(FEET) =   13.90
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.93
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.59
  STREET FLOW TRAVEL TIME(MIN.) =   2.12   Tc(MIN.) =  15.58
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.156
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.59      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    1.59      SUBAREA RUNOFF(CFS) =    2.44
  EFFECTIVE AREA(ACRES) =     10.27    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     10.27        PEAK FLOW RATE(CFS) =      15.78
```

```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.40   HALFSTREET FLOOD WIDTH(FEET) =  13.82
  FLOW VELOCITY(FEET/SEC.) =  3.89   DEPTH*VELOCITY(FT*FT/SEC.) =   1.57
  LONGEST FLOWPATH FROM NODE  20930.00 TO NODE  20932.00 =  1475.87 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020932.0 TO NODE LR020933.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1610.00  DOWNSTREAM ELEVATION(FEET) = 1560.00
  STREET LENGTH(FEET) =  1367.05   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.76

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      38.87
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.50
    HALFSTREET FLOOD WIDTH(FEET) =   18.08
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.35
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.68
  STREET FLOW TRAVEL TIME(MIN.) =   4.26   Tc(MIN.) =  19.84
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.865
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       12.11      0.75      0.60    56
  SCHOOL                     B       22.59      0.75      0.60    56
  PUBLIC PARK                B        1.47      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.61
  SUBAREA AREA(ACRES) =   36.17      SUBAREA RUNOFF(CFS) =   45.86
  EFFECTIVE AREA(ACRES) =     46.44    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.61
  TOTAL AREA(ACRES) =     46.44        PEAK FLOW RATE(CFS) =      58.95

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.56   HALFSTREET FLOOD WIDTH(FEET) =  20.94
  FLOW VELOCITY(FEET/SEC.) =  6.20   DEPTH*VELOCITY(FT*FT/SEC.) =   3.47
```



```
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1367.1 FT WITH ELEVATION-DROP =  50.0 FT, IS   58.9 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20933.00
  LONGEST FLOWPATH FROM NODE  20930.00 TO NODE  20933.00 =  2842.92 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020933.0 TO NODE LR020934.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1560.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1510.00
  FLOW LENGTH(FEET) =  1450.00   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  16.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.21
  PIPE-FLOW(CFS) =     58.95
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.40    Tc(MIN.) =  21.24
  LONGEST FLOWPATH FROM NODE  20930.00 TO NODE  20934.00 =  4292.92 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020934.0 TO NODE LR020934.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.24
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.790
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       26.74      0.75      0.60    56
  PUBLIC PARK                B        9.16      0.75      0.85    56
  SCHOOL                     B        6.76      0.75      0.60    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        6.64      0.63      1.00    65
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.77      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.73
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   52.07      SUBAREA RUNOFF(CFS) =   60.04
  EFFECTIVE AREA(ACRES) =     98.51   AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.66
  TOTAL AREA(ACRES) =     98.51       PEAK FLOW RATE(CFS) =     115.86

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

****************************************************************************
  FLOW PROCESS FROM NODE LR020934.0 TO NODE LR020935.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1510.00
```

```
  DOWNSTREAM NODE ELEVATION(FEET) =  1485.00
  FLOW LENGTH(FEET) =   871.47   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  22.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.06
  PIPE-FLOW(CFS) =    115.86
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.76    Tc(MIN.) =  22.00
  LONGEST FLOWPATH FROM NODE  20930.00 TO NODE  20935.00 =  5164.39 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020935.0 TO NODE LR020935.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  22.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.753
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       67.33      0.75      0.60    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        8.70      0.63      1.00    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.73
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.65
  SUBAREA AREA(ACRES) =   76.03      SUBAREA RUNOFF(CFS) =   87.79
  EFFECTIVE AREA(ACRES) =    174.54   AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.65
  TOTAL AREA(ACRES) =    174.54       PEAK FLOW RATE(CFS) =     200.33

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

****************************************************************************
  FLOW PROCESS FROM NODE LR020935.0 TO NODE LR020936.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1485.00  DOWNSTREAM(FEET) =  1465.00
  FLOW LENGTH(FEET) =   799.10   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   3.00   GIVEN BOX HEIGHT(FEET) =   6.00
  FLOWDEPTH IN BOX IS  3.79 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  17.62
  BOX-FLOW(CFS) =    200.33
  BOX-FLOW TRAVEL TIME(MIN.) =   0.76    Tc(MIN.) =  22.76
  LONGEST FLOWPATH FROM NODE  20930.00 TO NODE  20936.00 =  5963.49 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020936.0 TO NODE LR020936.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  22.76
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.717
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```



```
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B      101.89      0.75      0.60    56
  COMMERCIAL                 B        1.19      0.75      0.10    56
  MOBILE HOME PARK           B       18.61      0.75      0.25    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        2.78      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.54
  SUBAREA AREA(ACRES) =  124.47      SUBAREA RUNOFF(CFS) =  147.09
  EFFECTIVE AREA(ACRES) =    299.01   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.61
  TOTAL AREA(ACRES) =    299.01       PEAK FLOW RATE(CFS) =     341.89

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

****************************************************************************
  FLOW PROCESS FROM NODE LR020936.0 TO NODE LR020937.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1465.00  DOWNSTREAM(FEET) =  1440.00
  FLOW LENGTH(FEET) =   712.54   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   4.00   GIVEN BOX HEIGHT(FEET) =   4.00
  *GIVEN BOX HEIGHT(FEET) =   4.00   ESTIMATED BOX BASEWIDTH(FEET) =    4.49
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  19.03
  BOX-FLOW(CFS) =    341.89
  BOX-FLOW TRAVEL TIME(MIN.) =   0.62    Tc(MIN.) =  23.38
  LONGEST FLOWPATH FROM NODE  20930.00 TO NODE  20937.00 =  6676.03 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020937.0 TO NODE LR020937.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  23.38
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.690
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        6.69      0.75      0.60    56
  MOBILE HOME PARK           B       28.27      0.75      0.25    56
  COMMERCIAL                 B        1.13      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.31
  SUBAREA AREA(ACRES) =   36.09      SUBAREA RUNOFF(CFS) =   47.35
  EFFECTIVE AREA(ACRES) =    335.10   AREA-AVERAGED Fm(INCH/HR) =  0.42
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.57
  TOTAL AREA(ACRES) =    335.10       PEAK FLOW RATE(CFS) =     381.80

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

****************************************************************************
  FLOW PROCESS FROM NODE LR020937.0 TO NODE LR020938.0 IS CODE =  48
```

```
--------------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1440.00  DOWNSTREAM(FEET) =  1415.00
  FLOW LENGTH(FEET) =   983.49   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   4.00   GIVEN BOX HEIGHT(FEET) =   4.00
  *GIVEN BOX HEIGHT(FEET) =   4.00   ESTIMATED BOX BASEWIDTH(FEET) =    5.54
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  17.24
  BOX-FLOW(CFS) =    381.80
  BOX-FLOW TRAVEL TIME(MIN.) =   0.95    Tc(MIN.) =  24.33
  LONGEST FLOWPATH FROM NODE  20930.00 TO NODE  20938.00 =  7659.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020938.0 TO NODE LR020938.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  24.33
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.650
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        3.30      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       20.77      0.75      0.60    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B       10.89      0.75      0.50    56
  MOBILE HOME PARK           B       29.98      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
  SUBAREA AREA(ACRES) =   64.94      SUBAREA RUNOFF(CFS) =   79.10
  EFFECTIVE AREA(ACRES) =    400.04   AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.54
  TOTAL AREA(ACRES) =    400.04       PEAK FLOW RATE(CFS) =     448.86

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

****************************************************************************
  FLOW PROCESS FROM NODE LR020938.0 TO NODE LR020939.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1415.00  DOWNSTREAM(FEET) =  1409.00
  FLOW LENGTH(FEET) =   668.85   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   4.00   GIVEN BOX HEIGHT(FEET) =   4.00
  *GIVEN BOX HEIGHT(FEET) =   4.00   ESTIMATED BOX BASEWIDTH(FEET) =    9.62
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  11.67
  BOX-FLOW(CFS) =    448.86
  BOX-FLOW TRAVEL TIME(MIN.) =   0.96    Tc(MIN.) =  25.29
  LONGEST FLOWPATH FROM NODE  20930.00 TO NODE  20939.00 =  8328.37 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020939.0 TO NODE LR020939.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
```



```
============================================================================
  MAINLINE Tc(MIN) =  25.29
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.612
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        6.87      0.75      0.50    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.91      0.75      0.60    56
  SCHOOL                     B        3.23      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.54
  SUBAREA AREA(ACRES) =   11.01      SUBAREA RUNOFF(CFS) =   11.99
  EFFECTIVE AREA(ACRES) =    411.05   AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.54
  TOTAL AREA(ACRES) =    411.05       PEAK FLOW RATE(CFS) =     448.86
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

****************************************************************************
  FLOW PROCESS FROM NODE LR020939.0 TO NODE LR020939.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  25.29
  RAINFALL INTENSITY(INCH/HR) =   1.61
  AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.74
  AREA-AVERAGED Ap =  0.54
  EFFECTIVE STREAM AREA(ACRES) =   411.05
  TOTAL STREAM AREA(ACRES) =   411.05
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    448.86

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    413.37  27.53    1.532  0.75( 0.51) 0.69   451.2 LR020900.0
      1    340.36  36.82    1.287  0.74( 0.52) 0.70   495.5 LR020910.0
      2    448.86  25.29    1.612  0.74( 0.40) 0.54   411.1 LR020930.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    858.46  25.29    1.612  0.74( 0.46) 0.62   825.5 LR020930.0
      2    832.53  27.53    1.532  0.74( 0.46) 0.62   862.2 LR020900.0
      3    668.45  36.82    1.287  0.74( 0.47) 0.63   906.5 LR020910.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    858.46    Tc(MIN.) =    25.29
```

```
  EFFECTIVE AREA(ACRES) =   825.53   AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =    906.51
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20939.00 = 12474.01 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020939.0 TO NODE LR020939.0 IS CODE =  71
----------------------------------------------------------------------------
  >>>>>PEAK FLOW RATE ESTIMATOR CHANGED TO UNIT-HYDROGRAPH METHOD<<<<<
  >>>>>USING TIME-OF-CONCENTRATION OF LONGEST FLOWPATH<<<<<
============================================================================
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.63;6H= 2.27;24H= 4.62
  S-GRAPH: VALLEY(DEV.)= 81.6%;VALLEY(UNDEV.)/DESERT= 18.4%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.46; LAG(HR) = 0.37; Fm(INCH/HR) = 0.47; Ybar = 0.53
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    906.51
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20939.00 = 12474.01 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0336; Lca/L=0.4,n=.0301; Lca/L=0.5,n=.0277;Lca/L=0.6,n=.0258
  TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     175.90
  UNIT-HYDROGRAPH METHOD PEAK FLOW RATE(CFS) =    925.76
  TOTAL PEAK FLOW RATE(CFS) =    925.76 (SOURCE FLOW INCLUDED)
  RATIONAL METHOD PEAK FLOW RATE(CFS) =    858.46
   (UPSTREAM NODE PEAK FLOW RATE(CFS) =    858.46)
  PEAK FLOW RATE(CFS) USED =    925.76

****************************************************************************
  FLOW PROCESS FROM NODE LR020939.0 TO NODE LR020940.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1409.00  DOWNSTREAM(FEET) =  1370.00
  FLOW LENGTH(FEET) =  2606.42   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   4.00   GIVEN BOX HEIGHT(FEET) =   4.00
  *GIVEN BOX HEIGHT(FEET) =   4.00   ESTIMATED BOX BASEWIDTH(FEET) =   14.35
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  16.13
  BOX-FLOW(CFS) =    925.76
  BOX-FLOW TRAVEL TIME(MIN.) =   2.69    Tc(MIN.) =  30.22
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20940.00 = 15080.43 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020940.0 TO NODE LR020940.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  30.22
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.449
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  SCHOOL                     B       57.18      0.75      0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       27.41      0.75      0.60    56
```



```
  MOBILE HOME PARK           B        4.75      0.75      0.25    56
  COMMERCIAL                 B        4.99      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.56
  SUBAREA AREA(ACRES) =   94.33
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.63;6H= 2.27;24H= 4.62
  S-GRAPH: VALLEY(DEV.)= 83.3%;VALLEY(UNDEV.)/DESERT= 16.7%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.50; LAG(HR) = 0.40; Fm(INCH/HR) = 0.46; Ybar = 0.53
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1000.84
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20940.00 = 15080.43 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0313; Lca/L=0.4,n=.0281; Lca/L=0.5,n=.0258;Lca/L=0.6,n=.0241
  TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     195.90
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    940.68
  TOTAL AREA(ACRES) =   1000.84       PEAK FLOW RATE(CFS) =     940.68

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

****************************************************************************
  FLOW PROCESS FROM NODE LR020940.0 TO NODE LR020940.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020852.0 TO NODE LR020852.0 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20852.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2496.69    Tc(MIN.) =  30.42
  AREA-AVERAGED Fm(INCH/HR) =  0.49    Ybar = 0.54
  TOTAL AREA(ACRES) =    2992.92
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20852.00 = 24422.29 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020852.0 TO NODE LR020852.0 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2496.69    Tc(MIN.) =  30.42
  AREA-AVERAGED Fm(INCH/HR) =  0.49    Ybar = 0.54
  TOTAL AREA(ACRES) =    2992.92
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20852.00 = 24422.29 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020852.0 TO NODE LR020852.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
```

```
==========================================================================

**************************************************************************
  FLOW PROCESS FROM NODE LR020852.0 TO NODE LR020940.0 IS CODE =  48
--------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1413.00  DOWNSTREAM(FEET) =  1370.00
  FLOW LENGTH(FEET) =  2071.80   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  12.00   GIVEN BOX HEIGHT(FEET) =  10.00
  FLOWDEPTH IN BOX IS  6.40 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  32.49
  BOX-FLOW(CFS) =   2496.69
  BOX-FLOW TRAVEL TIME(MIN.) =   1.06    Tc(MIN.) =  31.48
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20940.00 = 26494.09 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE LR020940.0 TO NODE LR020940.0 IS CODE =  11
--------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
==========================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     2496.69    Tc(MIN.) =  31.48
  AREA-AVERAGED Fm(INCH/HR) =  0.49    Ybar = 0.54
  TOTAL AREA(ACRES) =    2992.92
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20940.00 = 26494.09 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =      940.68    Tc(MIN.) =  30.22
  AREA-AVERAGED Fm(INCH/HR) =  0.46    Ybar = 0.53
  TOTAL AREA(ACRES) =    1000.84
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20940.00 = 15080.43 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.63;6H= 2.28;24H= 4.79
  S-GRAPH: VALLEY(DEV.)= 90.1%;VALLEY(UNDEV.)/DESERT=  9.9%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.52; LAG(HR) = 0.42; Fm(INCH/HR) = 0.48; Ybar = 0.54
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.82; 30M = 0.82; 1HR = 0.82;
  3HR = 0.97; 6HR = 0.99; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   3993.76
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20940.00 = 26494.09 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0214; Lca/L=0.4,n=.0191; Lca/L=0.5,n=.0176;Lca/L=0.6,n=.0164
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     773.98
  PEAK FLOW RATE(CFS) =    3111.55

**************************************************************************
  FLOW PROCESS FROM NODE LR020940.0 TO NODE LR020940.0 IS CODE =  12
--------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
==========================================================================

**************************************************************************
  FLOW PROCESS FROM NODE LR020940.0 TO NODE LR020955.0 IS CODE =  48
```



```
--------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1370.00  DOWNSTREAM(FEET) =  1360.00
  FLOW LENGTH(FEET) =   618.86   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  16.00   GIVEN BOX HEIGHT(FEET) =  10.00
  FLOWDEPTH IN BOX IS  6.24 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  31.15
  BOX-FLOW(CFS) =   3111.55
  BOX-FLOW TRAVEL TIME(MIN.) =   0.33    Tc(MIN.) =  31.81
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20955.00 = 27112.95 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE LR020955.0 TO NODE LR020955.0 IS CODE =   1
--------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==========================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =    3111.55    Tc(MIN.) =  31.81
  AREA-AVERAGED Fm(INCH/HR) =  0.48   Ybar = 0.54
  TOTAL AREA(ACRES) =    3993.76

**************************************************************************
  FLOW PROCESS FROM NODE LR020950.0 TO NODE LR020951.0 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   667.18
  ELEVATION DATA: UPSTREAM(FEET) =   1438.00  DOWNSTREAM(FEET) =   1417.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.046
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.987
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  MOBILE HOME PARK           B        4.45      0.75       0.25    56    9.05
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.19      0.75       0.60    56   11.09
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.32
  SUBAREA RUNOFF(CFS) =     13.93
  TOTAL AREA(ACRES) =      5.64   PEAK FLOW RATE(CFS) =     13.93

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

**************************************************************************
  FLOW PROCESS FROM NODE LR020951.0 TO NODE LR020952.0 IS CODE =  92
--------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
==========================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1417.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1409.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   191.07
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
```

```
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.895
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.46      0.75      0.60    56
  MOBILE HOME PARK           B        2.56      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.30
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     17.56
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.57
  AVERAGE FLOW DEPTH(FEET) =   0.51   FLOOD WIDTH(FEET) =   21.89
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.48   Tc(MIN.) =   9.53
  SUBAREA AREA(ACRES) =    3.02       SUBAREA RUNOFF(CFS) =    7.25
  EFFECTIVE AREA(ACRES) =    8.66     AREA-AVERAGED Fm(INCH/HR) =   0.24
  AREA-AVERAGED Fp(INCH/HR) =   0.75  AREA-AVERAGED Ap =   0.32
  TOTAL AREA(ACRES) =      8.66         PEAK FLOW RATE(CFS) =      20.72

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.53   FLOOD WIDTH(FEET) =   24.28
  FLOW VELOCITY(FEET/SEC.) =   6.59   DEPTH*VELOCITY(FT*FT/SEC) =   3.50
  LONGEST FLOWPATH FROM NODE  20950.00 TO NODE  20952.00 =   858.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020952.0 TO NODE LR020953.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1409.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1404.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   204.94
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.782
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.20      0.75      0.60    56
  MOBILE HOME PARK           B        1.83      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.39
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     24.12
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.19
  AVERAGE FLOW DEPTH(FEET) =   0.59   FLOOD WIDTH(FEET) =   30.71
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.66   Tc(MIN.) =  10.19
  SUBAREA AREA(ACRES) =    3.03       SUBAREA RUNOFF(CFS) =    6.79
  EFFECTIVE AREA(ACRES) =   11.69     AREA-AVERAGED Fm(INCH/HR) =   0.25
  AREA-AVERAGED Fp(INCH/HR) =   0.75  AREA-AVERAGED Ap =   0.34
  TOTAL AREA(ACRES) =     11.69         PEAK FLOW RATE(CFS) =      26.63
```



```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.60   FLOOD WIDTH(FEET) =   32.20
  FLOW VELOCITY(FEET/SEC.) =   5.28   DEPTH*VELOCITY(FT*FT/SEC) =   3.16
  LONGEST FLOWPATH FROM NODE  20950.00 TO NODE  20953.00 =  1063.19 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020953.0 TO NODE LR020954.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1404.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1400.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   260.93
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.631
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.52      0.75      0.60    56
  MOBILE HOME PARK           B        0.19      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.58
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     30.29
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.40
  AVERAGE FLOW DEPTH(FEET) =   0.65   FLOOD WIDTH(FEET) =   38.32
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.99   Tc(MIN.) =  11.18
  SUBAREA AREA(ACRES) =    3.71       SUBAREA RUNOFF(CFS) =    7.33
  EFFECTIVE AREA(ACRES) =   15.40     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.75  AREA-AVERAGED Ap =   0.39
  TOTAL AREA(ACRES) =     15.40         PEAK FLOW RATE(CFS) =      32.38

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.66   FLOOD WIDTH(FEET) =   39.52
  FLOW VELOCITY(FEET/SEC.) =   4.45   DEPTH*VELOCITY(FT*FT/SEC) =   2.94
  LONGEST FLOWPATH FROM NODE  20950.00 TO NODE  20954.00 =  1324.12 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020954.0 TO NODE LR020955.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1400.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1360.00
  FLOW LENGTH(FEET) =  1961.31   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  84.00    NUMBER OF PIPES =   1
```

```
  DEPTH OF FLOW IN  84.0 INCH PIPE IS  10.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.15
  PIPE-FLOW(CFS) =     32.38
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   2.93    Tc(MIN.) =  14.11
  LONGEST FLOWPATH FROM NODE  20950.00 TO NODE  20955.00 =  3285.43 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020955.0 TO NODE LR020955.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  14.11
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.288
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        0.07      0.75      0.85    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        7.87      0.75      0.60    56
  MOBILE HOME PARK           B        1.54      0.75      0.25    56
  COMMERCIAL                 B        9.50      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.32
  SUBAREA AREA(ACRES) =   18.98      SUBAREA RUNOFF(CFS) =   34.97
  EFFECTIVE AREA(ACRES) =     34.38   AREA-AVERAGED Fm(INCH/HR) =  0.27
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.35
  TOTAL AREA(ACRES) =     34.38       PEAK FLOW RATE(CFS) =      62.59

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

****************************************************************************
  FLOW PROCESS FROM NODE LR020955.0 TO NODE LR020955.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  14.11
  RAINFALL INTENSITY(INCH/HR) =   2.29
  AREA-AVERAGED Fm(INCH/HR) =  0.27
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.35
  EFFECTIVE STREAM AREA(ACRES) =    34.38
  TOTAL STREAM AREA(ACRES) =    34.38
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     62.59
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1      3111.55   31.81     3993.76  LR020620.0
     2        62.59   14.11       34.38  LR020950.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.63;6H= 2.28;24H= 4.79
  S-GRAPH: VALLEY(DEV.)= 90.2%;VALLEY(UNDEV.)/DESERT=  9.8%
```



```
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.53; LAG(HR) = 0.42; Fm(INCH/HR) = 0.48; Ybar = 0.54
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.82; 30M = 0.82; 1HR = 0.82;
  3HR = 0.97; 6HR = 0.99; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   4028.14
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20955.00 = 27112.95 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0212; Lca/L=0.4,n=.0190; Lca/L=0.5,n=.0174;Lca/L=0.6,n=.0163
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     782.96
  PEAK FLOW RATE(CFS) =   3125.94

****************************************************************************
  FLOW PROCESS FROM NODE LR020955.0 TO NODE LR020955.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020539.0 TO NODE LR020539.0 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20539.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2924.46    Tc(MIN.) =  53.38
  AREA-AVERAGED Fm(INCH/HR) =  0.55    Ybar = 0.57
  TOTAL AREA(ACRES) =    5998.28
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20539.00 = 35104.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020539.0 TO NODE LR020539.0 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2924.46    Tc(MIN.) =  53.38
  AREA-AVERAGED Fm(INCH/HR) =  0.55    Ybar = 0.57
  TOTAL AREA(ACRES) =    5998.28
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20539.00 = 35104.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020539.0 TO NODE LR020539.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020539.0 TO NODE LR020955.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1366.00  DOWNSTREAM(FEET) =   1360.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   385.80   CHANNEL SLOPE =  0.0156
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   6.00
```

```
  CHANNEL FLOW THRU SUBAREA(CFS) =   2924.46
  FLOW VELOCITY(FEET/SEC.) =  26.76   FLOW DEPTH(FEET) =   4.98
  TRAVEL TIME(MIN.) =   0.24   Tc(MIN.) =  53.62
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20955.00 = 35490.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020955.0 TO NODE LR020955.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     2924.46    Tc(MIN.) =  53.62
  AREA-AVERAGED Fm(INCH/HR) =  0.55    Ybar = 0.57
  TOTAL AREA(ACRES) =    5998.28
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20955.00 = 35490.05 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     3125.94    Tc(MIN.) =  31.81
  AREA-AVERAGED Fm(INCH/HR) =  0.48    Ybar = 0.54
  TOTAL AREA(ACRES) =    4028.14
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20955.00 = 27112.95 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.74;1H= 0.98;3H= 1.70;6H= 2.42;24H= 5.23
  S-GRAPH: VALLEY(DEV.)= 68.9%;VALLEY(UNDEV.)/DESERT= 31.1%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.89; LAG(HR) = 0.71; Fm(INCH/HR) = 0.52; Ybar = 0.56
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.67; 30M = 0.68; 1HR = 0.68;
  3HR = 0.94; 6HR = 0.97; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  10026.42
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20955.00 = 35490.05 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0320; Lca/L=0.4,n=.0287; Lca/L=0.5,n=.0263;Lca/L=0.6,n=.0246
  TIME OF PEAK FLOW(HR) = 16.75  RUNOFF VOLUME(AF) =    1965.14
  PEAK FLOW RATE(CFS) =    4416.08

****************************************************************************
  FLOW PROCESS FROM NODE LR020955.0 TO NODE LR020955.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020955.0 TO NODE LR020956.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1360.00  DOWNSTREAM(FEET) =  1350.00
  FLOW LENGTH(FEET) =   666.58   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  23.00   GIVEN BOX HEIGHT(FEET) =  10.00
  FLOWDEPTH IN BOX IS  5.94 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  32.32
  BOX-FLOW(CFS) =   4416.08
  BOX-FLOW TRAVEL TIME(MIN.) =   0.34    Tc(MIN.) =  53.96
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20956.00 = 36156.63 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR020956.0 TO NODE LR020956.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  53.96
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.023
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        5.80      0.75       0.60    56
  COMMERCIAL                  B       17.13      0.75       0.10    56
  PUBLIC PARK                 B        0.39      0.75       0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.24
  SUBAREA AREA(ACRES) =   23.32
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.74;1H= 0.98;3H= 1.70;6H= 2.42;24H= 5.23
  S-GRAPH: VALLEY(DEV.)= 69.0%;VALLEY(UNDEV.)/DESERT= 31.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.90; LAG(HR) = 0.72; Fm(INCH/HR) = 0.52; Ybar = 0.56
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.67; 30M = 0.68; 1HR = 0.68;
  3HR = 0.94; 6HR = 0.97; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  10049.74
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20956.00 = 36156.63 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0316; Lca/L=0.4,n=.0284; Lca/L=0.5,n=.0261;Lca/L=0.6,n=.0243
  TIME OF PEAK FLOW(HR) = 16.75  RUNOFF VOLUME(AF) =    1972.06
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   4408.88
  TOTAL AREA(ACRES) =  10049.74       PEAK FLOW RATE(CFS) =    4416.08
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

****************************************************************************
  FLOW PROCESS FROM NODE LR020956.0 TO NODE LR020968.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1350.00  DOWNSTREAM(FEET) =  1335.00
  FLOW LENGTH(FEET) =   926.11   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  23.00   GIVEN BOX HEIGHT(FEET) =  10.00
  FLOWDEPTH IN BOX IS  5.79 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  33.18
  BOX-FLOW(CFS) =   4416.08
  BOX-FLOW TRAVEL TIME(MIN.) =   0.47    Tc(MIN.) =  54.43
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20968.00 = 37082.74 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020968.0 TO NODE LR020968.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  54.43
```

```
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.018
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        2.51      0.75      0.60    56
 COMMERCIAL                 B        3.07      0.75      0.10    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.32
 SUBAREA AREA(ACRES) =    5.58
 UNIT-HYDROGRAPH DATA:
 RAINFALL(INCH): 5M= 0.36;30M= 0.74;1H= 0.98;3H= 1.70;6H= 2.42;24H= 5.23
 S-GRAPH: VALLEY(DEV.)= 69.0%;VALLEY(UNDEV.)/DESERT= 31.0%
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
 Tc(HR) = 0.91; LAG(HR) = 0.73; Fm(INCH/HR) = 0.52; Ybar = 0.56
 USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
 DEPTH-AREA FACTORS: 5M = 0.67; 30M = 0.68; 1HR = 0.68;
 3HR = 0.94; 6HR = 0.97; 24HR= 0.98
 UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  10055.32
 LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20968.00 = 37082.74 FEET.
  EQUIVALENT BASIN FACTOR APPROXIMATIONS:
  Lca/L=0.3,n=.0312; Lca/L=0.4,n=.0280; Lca/L=0.5,n=.0257;Lca/L=0.6,n=.0240
 TIME OF PEAK FLOW(HR) = 16.75  RUNOFF VOLUME(AF) =    1973.56
 UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   4381.63
 TOTAL AREA(ACRES) =  10055.32       PEAK FLOW RATE(CFS) =    4416.08
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

****************************************************************************
 FLOW PROCESS FROM NODE LR020968.0 TO NODE LR020968.0 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 PEAK FLOW RATE(CFS) =    4416.08    Tc(MIN.) =  54.43
 AREA-AVERAGED Fm(INCH/HR) =  0.52   Ybar = 0.56
 TOTAL AREA(ACRES) =   10055.32

****************************************************************************
 FLOW PROCESS FROM NODE LR020960.0 TO NODE LR020961.0 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   935.10
 ELEVATION DATA: UPSTREAM(FEET) =   1380.00  DOWNSTREAM(FEET) =   1360.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.120
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.793
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        3.18      0.75      0.50    56   12.95
```



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 COMMERCIAL                 B        4.70      0.75      0.10    56   10.12
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.91      0.75      0.60    56   13.72
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.30
 SUBAREA RUNOFF(CFS) =     20.34
 TOTAL AREA(ACRES) =      8.79   PEAK FLOW RATE(CFS) =     20.34

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

****************************************************************************
 FLOW PROCESS FROM NODE LR020961.0 TO NODE LR020962.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1360.00  DOWNSTREAM ELEVATION(FEET) = 1359.00
 STREET LENGTH(FEET) =   280.72   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      24.70
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.61
   HALFSTREET FLOOD WIDTH(FEET) =   23.32
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.13
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.29
 STREET FLOW TRAVEL TIME(MIN.) =   2.20   Tc(MIN.) =  12.32
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.482
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        1.51      0.75      0.50    56
 COMMERCIAL                 B        2.33      0.75      0.10    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.44      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.29
 SUBAREA AREA(ACRES) =    4.28      SUBAREA RUNOFF(CFS) =    8.72
 EFFECTIVE AREA(ACRES) =     13.07    AREA-AVERAGED Fm(INCH/HR) =  0.22
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.30
 TOTAL AREA(ACRES) =     13.07        PEAK FLOW RATE(CFS) =      26.60

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62
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  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.62   HALFSTREET FLOOD WIDTH(FEET) =  24.00
  FLOW VELOCITY(FEET/SEC.) =  2.17   DEPTH*VELOCITY(FT*FT/SEC.) =   1.35
  LONGEST FLOWPATH FROM NODE  20960.00 TO NODE  20962.00 =  1215.82 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020962.0 TO NODE LR020963.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1359.00  DOWNSTREAM ELEVATION(FEET) = 1358.50
  STREET LENGTH(FEET) =   189.10   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      30.07
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.67
    HALFSTREET FLOOD WIDTH(FEET) =   26.62
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.02
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.36
  STREET FLOW TRAVEL TIME(MIN.) =   1.56   Tc(MIN.) =  13.88
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.310
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        1.24      0.75      0.50    56
  COMMERCIAL                 B        1.91      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.56      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.31
  SUBAREA AREA(ACRES) =    3.71      SUBAREA RUNOFF(CFS) =    6.94
  EFFECTIVE AREA(ACRES) =     16.78    AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.30
  TOTAL AREA(ACRES) =     16.78        PEAK FLOW RATE(CFS) =      31.52

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.68   HALFSTREET FLOOD WIDTH(FEET) =  27.11
  FLOW VELOCITY(FEET/SEC.) =  2.04   DEPTH*VELOCITY(FT*FT/SEC.) =   1.39
  LONGEST FLOWPATH FROM NODE  20960.00 TO NODE  20963.00 =  1404.92 FEET.

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  FLOW PROCESS FROM NODE LR020963.0 TO NODE LR020964.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1358.50  DOWNSTREAM ELEVATION(FEET) = 1358.00
  STREET LENGTH(FEET) =   201.59   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      34.67
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.71
    HALFSTREET FLOOD WIDTH(FEET) =   28.51
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.04
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.45
  STREET FLOW TRAVEL TIME(MIN.) =   1.65   Tc(MIN.) =  15.53
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.160
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        1.22      0.75      0.50    56
  COMMERCIAL                 B        1.94      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.45      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.30
  SUBAREA AREA(ACRES) =    3.61      SUBAREA RUNOFF(CFS) =    6.30
  EFFECTIVE AREA(ACRES) =     20.39    AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.30
  TOTAL AREA(ACRES) =     20.39        PEAK FLOW RATE(CFS) =      35.55

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.72   HALFSTREET FLOOD WIDTH(FEET) =  28.76
  FLOW VELOCITY(FEET/SEC.) =  2.06   DEPTH*VELOCITY(FT*FT/SEC.) =   1.47
  LONGEST FLOWPATH FROM NODE  20960.00 TO NODE  20964.00 =  1606.51 FEET.

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  FLOW PROCESS FROM NODE LR020964.0 TO NODE LR020965.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1358.00  DOWNSTREAM ELEVATION(FEET) = 1357.50
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 STREET LENGTH(FEET) =   201.59   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      38.59
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.73
   HALFSTREET FLOOD WIDTH(FEET) =   29.73
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.10
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.54
 STREET FLOW TRAVEL TIME(MIN.) =   1.60   Tc(MIN.) =  17.13
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.037
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       A        0.14      0.98      0.50    32
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        1.29      0.75      0.50    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.85      0.75      0.60    56
 COMMERCIAL                 B        1.55      0.75      0.10    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.76
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.36
 SUBAREA AREA(ACRES) =    3.83      SUBAREA RUNOFF(CFS) =    6.08
 EFFECTIVE AREA(ACRES) =     24.22    AREA-AVERAGED Fm(INCH/HR) =  0.23
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.31
 TOTAL AREA(ACRES) =     24.22        PEAK FLOW RATE(CFS) =      39.36

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.74   HALFSTREET FLOOD WIDTH(FEET) =  29.92
 FLOW VELOCITY(FEET/SEC.) =  2.11   DEPTH*VELOCITY(FT*FT/SEC.) =   1.56
 LONGEST FLOWPATH FROM NODE  20960.00 TO NODE  20965.00 =  1808.10 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020965.0 TO NODE LR020966.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1357.50  DOWNSTREAM ELEVATION(FEET) = 1357.00
 STREET LENGTH(FEET) =   207.50   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
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 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      42.74
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.76
   HALFSTREET FLOOD WIDTH(FEET) =   31.08
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.13
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.62
 STREET FLOW TRAVEL TIME(MIN.) =   1.62   Tc(MIN.) =  18.75
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.929
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       A        0.74      0.98      0.50    32
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        0.93      0.75      0.50    56
 COMMERCIAL                 B        2.70      0.75      0.10    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.82
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.25
 SUBAREA AREA(ACRES) =    4.37      SUBAREA RUNOFF(CFS) =    6.77
 EFFECTIVE AREA(ACRES) =     28.59    AREA-AVERAGED Fm(INCH/HR) =  0.23
 AREA-AVERAGED Fp(INCH/HR) =  0.76  AREA-AVERAGED Ap =  0.30
 TOTAL AREA(ACRES) =     28.59        PEAK FLOW RATE(CFS) =      43.78

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.77   HALFSTREET FLOOD WIDTH(FEET) =  31.38
 FLOW VELOCITY(FEET/SEC.) =  2.14   DEPTH*VELOCITY(FT*FT/SEC.) =   1.65
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  207.5 FT WITH ELEVATION-DROP =   0.5 FT, IS   11.3 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20966.00
 LONGEST FLOWPATH FROM NODE  20960.00 TO NODE  20966.00 =  2015.60 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020966.0 TO NODE LR020967.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1357.00  DOWNSTREAM ELEVATION(FEET) = 1356.00
 STREET LENGTH(FEET) =   341.55   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
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  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      48.32
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.77
    HALFSTREET FLOOD WIDTH(FEET) =   31.38
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.37
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.82
  STREET FLOW TRAVEL TIME(MIN.) =   2.41   Tc(MIN.) =  21.16
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.794
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        2.02      0.98      0.50    32
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.32      0.75      0.50    56
  COMMERCIAL                 A        0.04      0.98      0.10    32
  COMMERCIAL                 B        4.03      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.89
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.25
  SUBAREA AREA(ACRES) =    6.41      SUBAREA RUNOFF(CFS) =    9.08
  EFFECTIVE AREA(ACRES) =     35.00    AREA-AVERAGED Fm(INCH/HR) =  0.23
  AREA-AVERAGED Fp(INCH/HR) =  0.78  AREA-AVERAGED Ap =  0.29
  TOTAL AREA(ACRES) =     35.00        PEAK FLOW RATE(CFS) =      49.39

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.77   HALFSTREET FLOOD WIDTH(FEET) =  31.69
  FLOW VELOCITY(FEET/SEC.) =  2.37   DEPTH*VELOCITY(FT*FT/SEC.) =   1.84
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  341.5 FT WITH ELEVATION-DROP =   1.0 FT, IS   14.9 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20967.00
  LONGEST FLOWPATH FROM NODE  20960.00 TO NODE  20967.00 =  2357.15 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020967.0 TO NODE LR020968.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1356.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1335.00
  FLOW LENGTH(FEET) =  1730.15   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  19.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.19
  PIPE-FLOW(CFS) =     49.39
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   2.74    Tc(MIN.) =  23.90
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  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.668
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       13.57      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.04      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.19
  SUBAREA AREA(ACRES) =   16.61      SUBAREA RUNOFF(CFS) =   22.79
  EFFECTIVE AREA(ACRES) =     51.61    AREA-AVERAGED Fm(INCH/HR) =  0.20
  AREA-AVERAGED Fp(INCH/HR) =  0.77  AREA-AVERAGED Ap =  0.26
  TOTAL AREA(ACRES) =     51.61        PEAK FLOW RATE(CFS) =     68.20

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.63; 6HR = 2.27; 24HR = 4.62

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 26.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   18.81
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.51
    HALFSTREET FLOOD WIDTH(FEET) =   17.47
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.90
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.47
  LONGEST FLOWPATH FROM NODE  20960.00 TO NODE  20968.00 =  4087.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020968.0 TO NODE LR020968.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  23.90
  RAINFALL INTENSITY(INCH/HR) =   1.67
  AREA-AVERAGED Fm(INCH/HR) =  0.20
  AREA-AVERAGED Fp(INCH/HR) =  0.77
  AREA-AVERAGED Ap =  0.26
  EFFECTIVE STREAM AREA(ACRES) =    51.61
  TOTAL STREAM AREA(ACRES) =    51.61
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     68.20
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1      4416.08   54.43    10055.32  LR020120.0
     2        68.20   23.90       51.61  LR020960.0
```

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.74;1H= 0.98;3H= 1.70;6H= 2.42;24H= 5.22
  S-GRAPH: VALLEY(DEV.)= 69.1%;VALLEY(UNDEV.)/DESERT= 30.9%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.91; LAG(HR) = 0.73; Fm(INCH/HR) = 0.52; Ybar = 0.56
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.67; 30M = 0.68; 1HR = 0.68;
  3HR = 0.94; 6HR = 0.97; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  10106.93
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20968.00 = 37082.74 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0312; Lca/L=0.4,n=.0280; Lca/L=0.5,n=.0257;Lca/L=0.6,n=.0240
  TIME OF PEAK FLOW(HR) = 16.75  RUNOFF VOLUME(AF) =    1988.42
  PEAK FLOW RATE(CFS) =   4407.80
    (UPSTREAM NODE PEAK FLOW RATE(CFS) =   4416.08)
  PEAK FLOW RATE(CFS) USED =   4416.08

****************************************************************************
  FLOW PROCESS FROM NODE LR020968.0 TO NODE LR020968.0 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20968.dna
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =  10106.93  TC(MIN.) =     54.43
  AREA-AVERAGED Fm(INCH/HR)=  0.52   Ybar =  0.56
  PEAK FLOW RATE(CFS)   =   4416.08
============================================================================
============================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                          San Bernardino County
                    Transportation/ Flood Control Department

                          Water Resources Division

 ************************* DESCRIPTION OF STUDY *************************
* LR 0210ZZ FILE                                                       *
*  25-YEAR STORM                                                       *
*                                                                      *
 ************************************************************************

  FILE NAME: LR0210ZZ.Z25
  TIME/DATE OF STUDY: 11:26 02/23/2006
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 0.9600

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)     SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
```



```
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


 ************************************************************************
  FLOW PROCESS FROM NODE LR021000.0 TO NODE LR021001.0 IS CODE =  21
 ------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   690.87
  ELEVATION DATA: UPSTREAM(FEET) =   1535.00  DOWNSTREAM(FEET) =   1518.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.815
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.545
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.92      0.75       0.60    56   11.82
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     11.17
  TOTAL AREA(ACRES) =      5.92   PEAK FLOW RATE(CFS) =     11.17

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

 ************************************************************************
  FLOW PROCESS FROM NODE LR021001.0 TO NODE LR021002.0 IS CODE =  63
 ------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
========================================================================
  UPSTREAM ELEVATION(FEET) = 1518.00  DOWNSTREAM ELEVATION(FEET) = 1480.00
  STREET LENGTH(FEET) =   646.60   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
```

```
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.67

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      18.91
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.39
    HALFSTREET FLOOD WIDTH(FEET) =   12.96
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.26
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.03
  STREET FLOW TRAVEL TIME(MIN.) =   2.05   Tc(MIN.) =  13.86
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.312
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        9.22      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    9.22      SUBAREA RUNOFF(CFS) =   15.46
  EFFECTIVE AREA(ACRES) =     15.14    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     15.14        PEAK FLOW RATE(CFS) =      25.39

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.42   HALFSTREET FLOOD WIDTH(FEET) =  14.60
  FLOW VELOCITY(FEET/SEC.) =  5.64   DEPTH*VELOCITY(FT*FT/SEC.) =   2.36
  LONGEST FLOWPATH FROM NODE  21000.00 TO NODE  21002.00 =  1337.47 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021002.0 TO NODE LR021013.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1480.00  DOWNSTREAM(FEET) =   1433.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1375.46   CHANNEL SLOPE =  0.0342
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   1.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     25.39
  FLOW VELOCITY(FEET/SEC.) =   5.72   FLOW DEPTH(FEET) =   0.92
  TRAVEL TIME(MIN.) =   4.01   Tc(MIN.) =  17.87
  LONGEST FLOWPATH FROM NODE  21000.00 TO NODE  21013.00 =  2712.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021013.0 TO NODE LR021013.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.87
```



```
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.985
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        7.03      0.75      0.60    56
  SCHOOL                     B        7.98      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   15.01      SUBAREA RUNOFF(CFS) =   20.76
  EFFECTIVE AREA(ACRES) =     30.15   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     30.15       PEAK FLOW RATE(CFS) =      41.69

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

****************************************************************************
  FLOW PROCESS FROM NODE LR021013.0 TO NODE LR021013.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  17.87
  RAINFALL INTENSITY(INCH/HR) =   1.99
  AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.60
  EFFECTIVE STREAM AREA(ACRES) =    30.15
  TOTAL STREAM AREA(ACRES) =    30.15
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     41.69

****************************************************************************
  FLOW PROCESS FROM NODE LR021010.0 TO NODE LR021011.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   911.60
  ELEVATION DATA: UPSTREAM(FEET) =   1490.00  DOWNSTREAM(FEET) =   1462.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.628
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.445
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        7.05      0.75      0.60    56   12.63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     12.67
  TOTAL AREA(ACRES) =      7.05   PEAK FLOW RATE(CFS) =     12.67

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR021011.0 TO NODE LR021012.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1462.00  DOWNSTREAM ELEVATION(FEET) = 1440.00
  STREET LENGTH(FEET) =   809.73   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.83

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      16.76
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.42
    HALFSTREET FLOOD WIDTH(FEET) =   14.45
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.80
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.58
  STREET FLOW TRAVEL TIME(MIN.) =   3.55   Tc(MIN.) =  16.18
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.108
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.37      0.75      0.60    56
  SCHOOL                     B        1.10      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    5.47      SUBAREA RUNOFF(CFS) =    8.17
  EFFECTIVE AREA(ACRES) =     12.52    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     12.52        PEAK FLOW RATE(CFS) =      18.69

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.43   HALFSTREET FLOOD WIDTH(FEET) =  15.07
  FLOW VELOCITY(FEET/SEC.) =  3.91   DEPTH*VELOCITY(FT*FT/SEC.) =   1.67
  LONGEST FLOWPATH FROM NODE  21010.00 TO NODE  21012.00 =  1721.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021012.0 TO NODE LR021013.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1440.00  DOWNSTREAM ELEVATION(FEET) = 1433.00
  STREET LENGTH(FEET) =   312.07   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00
```



```
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.88

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      20.52
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.45
    HALFSTREET FLOOD WIDTH(FEET) =   16.24
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.72
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.68
  STREET FLOW TRAVEL TIME(MIN.) =   1.40   Tc(MIN.) =  17.58
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.005
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.66      0.75      0.60    56
  SCHOOL                     B        1.95      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    2.61      SUBAREA RUNOFF(CFS) =    3.66
  EFFECTIVE AREA(ACRES) =     15.13    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     15.13        PEAK FLOW RATE(CFS) =      21.20

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.46   HALFSTREET FLOOD WIDTH(FEET) =  16.48
  FLOW VELOCITY(FEET/SEC.) =  3.74   DEPTH*VELOCITY(FT*FT/SEC.) =   1.71
  LONGEST FLOWPATH FROM NODE  21010.00 TO NODE  21013.00 =  2033.40 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021013.0 TO NODE LR021013.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  17.58
  RAINFALL INTENSITY(INCH/HR) =   2.01
  AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.60
  EFFECTIVE STREAM AREA(ACRES) =    15.13
  TOTAL STREAM AREA(ACRES) =    15.13
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     21.20

  ** CONFLUENCE DATA **
```

```
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
    1     41.69  17.87    1.985  0.75( 0.45) 0.60    30.2 LR021000.0
    2     21.20  17.58    2.005  0.75( 0.45) 0.60    15.1 LR021010.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
    1     62.73  17.58    2.005  0.75( 0.45) 0.60    44.8 LR021010.0
    2     62.61  17.87    1.985  0.75( 0.45) 0.60    45.3 LR021000.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     62.73    Tc(MIN.) =    17.58
  EFFECTIVE AREA(ACRES) =    44.78   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     45.28
  LONGEST FLOWPATH FROM NODE  21000.00 TO NODE  21013.00 =  2712.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021013.0 TO NODE LR021014.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1433.00  DOWNSTREAM(FEET) =   1380.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1311.64   CHANNEL SLOPE =  0.0404
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     62.73
  FLOW VELOCITY(FEET/SEC.) =   7.50   FLOW DEPTH(FEET) =   1.15
  TRAVEL TIME(MIN.) =   2.92   Tc(MIN.) =  20.49
  LONGEST FLOWPATH FROM NODE  21000.00 TO NODE  21014.00 =  4024.57 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021014.0 TO NODE LR021014.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  20.49
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.829
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       19.47      0.75      0.60    56
  COMMERCIAL                 B        2.09      0.75      0.10    56
  MOBILE HOME PARK           B        0.23      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.55
  SUBAREA AREA(ACRES) =   21.79      SUBAREA RUNOFF(CFS) =   27.82
  EFFECTIVE AREA(ACRES) =     66.57   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.58
  TOTAL AREA(ACRES) =     67.07       PEAK FLOW RATE(CFS) =      83.44

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
```



```
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

****************************************************************************
  FLOW PROCESS FROM NODE LR021014.0 TO NODE LR021015.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1380.00  DOWNSTREAM ELEVATION(FEET) = 1345.00
  STREET LENGTH(FEET) =  1339.49   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      91.92
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.67
    HALFSTREET FLOOD WIDTH(FEET) =   26.38
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.28
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.19
  STREET FLOW TRAVEL TIME(MIN.) =   3.56   Tc(MIN.) =  24.05
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.662
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.31      0.75      0.60    56
  MOBILE HOME PARK           B        9.23      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.36
  SUBAREA AREA(ACRES) =   13.54      SUBAREA RUNOFF(CFS) =   16.95
  EFFECTIVE AREA(ACRES) =     80.11    AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.55
  TOTAL AREA(ACRES) =     80.61       PEAK FLOW RATE(CFS) =      90.36

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.66   HALFSTREET FLOOD WIDTH(FEET) =  26.19
  FLOW VELOCITY(FEET/SEC.) =  6.25   DEPTH*VELOCITY(FT*FT/SEC.) =   4.15
  LONGEST FLOWPATH FROM NODE  21000.00 TO NODE  21015.00 =  5364.06 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021015.0 TO NODE LR021032.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
```

```
  UPSTREAM ELEVATION(FEET) = 1345.00  DOWNSTREAM ELEVATION(FEET) = 1332.00
  STREET LENGTH(FEET) =   945.30   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      95.49
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.75
    HALFSTREET FLOOD WIDTH(FEET) =   30.28
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.01
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.73
  STREET FLOW TRAVEL TIME(MIN.) =   3.15   Tc(MIN.) =  27.20
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.543
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.76      0.75      0.60    56
  SCHOOL                     B        3.85      0.75      0.60    56
  MOBILE HOME PARK           B        2.60      0.75      0.25    56
  PUBLIC PARK                B        0.44      0.75      0.85    56
  COMMERCIAL                 B        0.91      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.47
  SUBAREA AREA(ACRES) =    9.56      SUBAREA RUNOFF(CFS) =   10.26
  EFFECTIVE AREA(ACRES) =     89.67    AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.54
  TOTAL AREA(ACRES) =     90.17        PEAK FLOW RATE(CFS) =      92.11

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.74   HALFSTREET FLOOD WIDTH(FEET) =  29.86
  FLOW VELOCITY(FEET/SEC.) =  4.96   DEPTH*VELOCITY(FT*FT/SEC.) =   3.66
  LONGEST FLOWPATH FROM NODE  21000.00 TO NODE  21032.00 =  6309.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021032.0 TO NODE LR021032.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  27.20
  RAINFALL INTENSITY(INCH/HR) =   1.54
  AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.75
```



```
  AREA-AVERAGED Ap =  0.54
  EFFECTIVE STREAM AREA(ACRES) =    89.67
  TOTAL STREAM AREA(ACRES) =    90.17
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     92.11

****************************************************************************
  FLOW PROCESS FROM NODE LR021020.0 TO NODE LR021021.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   732.03
  ELEVATION DATA: UPSTREAM(FEET) =   1442.00  DOWNSTREAM(FEET) =   1440.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.306
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.179
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.89      0.75      0.60    56   18.77
  MOBILE HOME PARK           B        4.31      0.75      0.25    56   15.31
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.36
  SUBAREA RUNOFF(CFS) =     10.67
  TOTAL AREA(ACRES) =      6.20   PEAK FLOW RATE(CFS) =     10.67

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

****************************************************************************
  FLOW PROCESS FROM NODE LR021021.0 TO NODE LR021022.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1440.00  DOWNSTREAM ELEVATION(FEET) = 1433.00
  STREET LENGTH(FEET) =   186.35   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.76

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      14.91
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.38
    HALFSTREET FLOOD WIDTH(FEET) =   12.88
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.19
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.61
  STREET FLOW TRAVEL TIME(MIN.) =   0.74   Tc(MIN.) =  16.05
```

```
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.118
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 MOBILE HOME PARK           B        4.18      0.75      0.25    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.81      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.31
 SUBAREA AREA(ACRES) =    4.99      SUBAREA RUNOFF(CFS) =    8.48
 EFFECTIVE AREA(ACRES) =     11.19    AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.33
 TOTAL AREA(ACRES) =     11.19        PEAK FLOW RATE(CFS) =      18.81

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.41   HALFSTREET FLOOD WIDTH(FEET) =  14.13
 FLOW VELOCITY(FEET/SEC.) =  4.45   DEPTH*VELOCITY(FT*FT/SEC.) =   1.82
 LONGEST FLOWPATH FROM NODE  21020.00 TO NODE  21022.00 =   918.38 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021022.0 TO NODE LR021023.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1433.00  DOWNSTREAM ELEVATION(FEET) = 1416.00
 STREET LENGTH(FEET) =   274.30   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.66

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      25.28
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.42
   HALFSTREET FLOOD WIDTH(FEET) =   14.45
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.73
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.38
 STREET FLOW TRAVEL TIME(MIN.) =   0.80   Tc(MIN.) =  16.84
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.057
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 MOBILE HOME PARK           B        6.51      0.75      0.25    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.37      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.31
```



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 SUBAREA AREA(ACRES) =    7.88      SUBAREA RUNOFF(CFS) =   12.94
 EFFECTIVE AREA(ACRES) =     19.07    AREA-AVERAGED Fm(INCH/HR) =  0.24
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.32
 TOTAL AREA(ACRES) =     19.07        PEAK FLOW RATE(CFS) =      31.14

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.44   HALFSTREET FLOOD WIDTH(FEET) =  15.70
 FLOW VELOCITY(FEET/SEC.) =  6.03   DEPTH*VELOCITY(FT*FT/SEC.) =   2.65
 LONGEST FLOWPATH FROM NODE  21020.00 TO NODE  21023.00 =  1192.68 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021023.0 TO NODE LR021024.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1416.00  DOWNSTREAM ELEVATION(FEET) = 1402.00
 STREET LENGTH(FEET) =   250.39   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.68

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      36.68
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.47
   HALFSTREET FLOOD WIDTH(FEET) =   17.10
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.03
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.82
 STREET FLOW TRAVEL TIME(MIN.) =   0.69   Tc(MIN.) =  17.54
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.008
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 MOBILE HOME PARK           B        6.35      0.75      0.25    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.47      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.27
 SUBAREA AREA(ACRES) =    6.82      SUBAREA RUNOFF(CFS) =   11.07
 EFFECTIVE AREA(ACRES) =     25.89    AREA-AVERAGED Fm(INCH/HR) =  0.23
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.31
 TOTAL AREA(ACRES) =     25.89        PEAK FLOW RATE(CFS) =      41.37

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

 END OF SUBAREA STREET FLOW HYDRAULICS:
```

```
  DEPTH(FEET) = 0.48   HALFSTREET FLOOD WIDTH(FEET) =  17.88
  FLOW VELOCITY(FEET/SEC.) =  6.24   DEPTH*VELOCITY(FT*FT/SEC.) =   3.02
  LONGEST FLOWPATH FROM NODE  21020.00 TO NODE  21024.00 =  1443.07 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021024.0 TO NODE LR021025.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1402.00  DOWNSTREAM ELEVATION(FEET) = 1390.00
  STREET LENGTH(FEET) =   390.63   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.80

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      46.68
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.54
    HALFSTREET FLOOD WIDTH(FEET) =   19.85
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.42
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.91
  STREET FLOW TRAVEL TIME(MIN.) =   1.20   Tc(MIN.) =  18.74
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.930
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.17      0.75      0.60    56
  MOBILE HOME PARK           B        3.23      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.45
  SUBAREA AREA(ACRES) =    7.40      SUBAREA RUNOFF(CFS) =   10.63
  EFFECTIVE AREA(ACRES) =     33.29    AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.34
  TOTAL AREA(ACRES) =     33.29        PEAK FLOW RATE(CFS) =      50.17

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.55   HALFSTREET FLOOD WIDTH(FEET) =  20.39
  FLOW VELOCITY(FEET/SEC.) =  5.54   DEPTH*VELOCITY(FT*FT/SEC.) =   3.04
  LONGEST FLOWPATH FROM NODE  21020.00 TO NODE  21025.00 =  1833.70 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021025.0 TO NODE LR021026.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
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  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1390.00  DOWNSTREAM ELEVATION(FEET) = 1385.00
  STREET LENGTH(FEET) =   357.04   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      52.56
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.62
    HALFSTREET FLOOD WIDTH(FEET) =   24.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.29
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.66
  STREET FLOW TRAVEL TIME(MIN.) =   1.39   Tc(MIN.) =  20.12
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.849
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.32      0.75      0.60    56
  COMMERCIAL                 B        1.20      0.75      0.10    56
  MOBILE HOME PARK           B        0.81      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.33
  SUBAREA AREA(ACRES) =    3.33      SUBAREA RUNOFF(CFS) =    4.79
  EFFECTIVE AREA(ACRES) =     36.62    AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.34
  TOTAL AREA(ACRES) =     36.62        PEAK FLOW RATE(CFS) =      52.54

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.62   HALFSTREET FLOOD WIDTH(FEET) =  24.00
  FLOW VELOCITY(FEET/SEC.) =  4.29   DEPTH*VELOCITY(FT*FT/SEC.) =   2.66
  LONGEST FLOWPATH FROM NODE  21020.00 TO NODE  21026.00 =  2190.74 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021026.0 TO NODE LR021027.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1385.00  DOWNSTREAM ELEVATION(FEET) = 1374.00
  STREET LENGTH(FEET) =   355.39   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
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  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.80

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      56.64
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.56
    HALFSTREET FLOOD WIDTH(FEET) =   21.25
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.80
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.28
  STREET FLOW TRAVEL TIME(MIN.) =   1.02   Tc(MIN.) =  21.14
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.795
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.67      0.75      0.60    56
  COMMERCIAL                 B        3.22      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.33
  SUBAREA AREA(ACRES) =    5.89      SUBAREA RUNOFF(CFS) =    8.22
  EFFECTIVE AREA(ACRES) =     42.51    AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.34
  TOTAL AREA(ACRES) =     42.51        PEAK FLOW RATE(CFS) =      58.97

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.57   HALFSTREET FLOOD WIDTH(FEET) =  21.62
  FLOW VELOCITY(FEET/SEC.) =  5.85   DEPTH*VELOCITY(FT*FT/SEC.) =   3.35
  LONGEST FLOWPATH FROM NODE  21020.00 TO NODE  21027.00 =  2546.13 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021027.0 TO NODE LR021028.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1374.00  DOWNSTREAM ELEVATION(FEET) = 1368.00
  STREET LENGTH(FEET) =   309.73   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90
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    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      62.42
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.62
    HALFSTREET FLOOD WIDTH(FEET) =   24.06
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.07
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.15
  STREET FLOW TRAVEL TIME(MIN.) =   1.02   Tc(MIN.) =  22.16
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.745
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.72      0.75      0.60    56
  COMMERCIAL                 B        2.05      0.75      0.10    56
  MOBILE HOME PARK           B        0.45      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.37
  SUBAREA AREA(ACRES) =    5.22      SUBAREA RUNOFF(CFS) =    6.89
  EFFECTIVE AREA(ACRES) =     47.73    AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.34
  TOTAL AREA(ACRES) =     47.73        PEAK FLOW RATE(CFS) =      63.95

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.63   HALFSTREET FLOOD WIDTH(FEET) =  24.30
  FLOW VELOCITY(FEET/SEC.) =  5.10   DEPTH*VELOCITY(FT*FT/SEC.) =   3.19
  LONGEST FLOWPATH FROM NODE  21020.00 TO NODE  21028.00 =  2855.86 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021028.0 TO NODE LR021029.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1368.00  DOWNSTREAM ELEVATION(FEET) = 1363.00
  STREET LENGTH(FEET) =   301.04   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      67.29
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.65
    HALFSTREET FLOOD WIDTH(FEET) =   25.52
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.89
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  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.18
 STREET FLOW TRAVEL TIME(MIN.) =   1.03   Tc(MIN.) =  23.19
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.698
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        2.13      0.75      0.60    56
 COMMERCIAL                 B        2.11      0.75      0.10    56
 MOBILE HOME PARK           B        0.89      0.75      0.25    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.33
 SUBAREA AREA(ACRES) =    5.13      SUBAREA RUNOFF(CFS) =    6.69
 EFFECTIVE AREA(ACRES) =     52.86    AREA-AVERAGED Fm(INCH/HR) =  0.26
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.34
 TOTAL AREA(ACRES) =     52.86        PEAK FLOW RATE(CFS) =      68.63

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.65   HALFSTREET FLOOD WIDTH(FEET) =  25.70
 FLOW VELOCITY(FEET/SEC.) =  4.92   DEPTH*VELOCITY(FT*FT/SEC.) =   3.22
 LONGEST FLOWPATH FROM NODE  21020.00 TO NODE  21029.00 =  3156.90 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021029.0 TO NODE LR021030.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1363.00  DOWNSTREAM ELEVATION(FEET) = 1350.00
 STREET LENGTH(FEET) =   360.35   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.76

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      92.24
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.64
   HALFSTREET FLOOD WIDTH(FEET) =   24.79
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.08
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.50
 STREET FLOW TRAVEL TIME(MIN.) =   0.85   Tc(MIN.) =  24.04
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.662
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 B        9.68      0.75      0.10    56
```



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 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       27.42      0.75      0.60    56
 MOBILE HOME PARK           B        2.60      0.75      0.25    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.46
 SUBAREA AREA(ACRES) =   39.70      SUBAREA RUNOFF(CFS) =   47.22
 EFFECTIVE AREA(ACRES) =     92.56    AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.39
 TOTAL AREA(ACRES) =     92.56        PEAK FLOW RATE(CFS) =     114.13

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.68   HALFSTREET FLOOD WIDTH(FEET) =  26.93
 FLOW VELOCITY(FEET/SEC.) =  7.49   DEPTH*VELOCITY(FT*FT/SEC.) =   5.08
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  360.4 FT WITH ELEVATION-DROP =  13.0 FT, IS  121.4 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21030.00
 LONGEST FLOWPATH FROM NODE  21020.00 TO NODE  21030.00 =  3517.25 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021030.0 TO NODE LR021031.0 IS CODE =  48
----------------------------------------------------------------------------
 >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1350.00  DOWNSTREAM(FEET) =  1340.00
 FLOW LENGTH(FEET) =   474.31   MANNING'S N =  0.014
 GIVEN BOX BASEWIDTH(FEET) =   6.00   GIVEN BOX HEIGHT(FEET) =   2.50
 FLOWDEPTH IN BOX IS  1.31 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  14.53
 BOX-FLOW(CFS) =    114.13
 BOX-FLOW TRAVEL TIME(MIN.) =   0.54    Tc(MIN.) =  24.58
 LONGEST FLOWPATH FROM NODE  21020.00 TO NODE  21031.00 =  3991.56 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021031.0 TO NODE LR021031.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  24.58
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.640
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        2.14      0.75      0.60    56
 COMMERCIAL                 B        3.35      0.75      0.10    56
 SCHOOL                     B        0.63      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.33
 SUBAREA AREA(ACRES) =    6.12      SUBAREA RUNOFF(CFS) =    7.69
 EFFECTIVE AREA(ACRES) =     98.68   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.39
 TOTAL AREA(ACRES) =     98.68        PEAK FLOW RATE(CFS) =     119.97

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR021031.0 TO NODE LR021032.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1340.00  DOWNSTREAM(FEET) =  1332.00
  FLOW LENGTH(FEET) =   772.50   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   6.00   GIVEN BOX HEIGHT(FEET) =   2.50
  FLOWDEPTH IN BOX IS  1.74 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  11.51
  BOX-FLOW(CFS) =    119.97
  BOX-FLOW TRAVEL TIME(MIN.) =   1.12    Tc(MIN.) =  25.70
  LONGEST FLOWPATH FROM NODE  21020.00 TO NODE  21032.00 =  4764.06 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021032.0 TO NODE LR021032.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  25.70
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.597
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.65      0.75      0.60    56
  SCHOOL                     B        1.27      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    1.92      SUBAREA RUNOFF(CFS) =    1.98
  EFFECTIVE AREA(ACRES) =    100.60   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.39
  TOTAL AREA(ACRES) =    100.60       PEAK FLOW RATE(CFS) =     119.97
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

****************************************************************************
  FLOW PROCESS FROM NODE LR021032.0 TO NODE LR021032.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  25.70
  RAINFALL INTENSITY(INCH/HR) =   1.60
  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.39
  EFFECTIVE STREAM AREA(ACRES) =   100.60
  TOTAL STREAM AREA(ACRES) =   100.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    119.97

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
```



```
    NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
       1     92.11  27.20    1.543  0.75( 0.40) 0.54    89.7 LR021010.0
       1     91.76  27.50    1.533  0.75( 0.40) 0.54    90.2 LR021000.0
       2    119.97  25.70    1.597  0.75( 0.29) 0.39   100.6 LR021020.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    211.07  25.70    1.597  0.75( 0.34) 0.46   185.3 LR021020.0
      2    207.17  27.20    1.543  0.75( 0.34) 0.46   190.3 LR021010.0
      3    205.87  27.50    1.533  0.75( 0.34) 0.46   190.8 LR021000.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    211.07    Tc(MIN.) =    25.70
  EFFECTIVE AREA(ACRES) =   185.33   AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.46
  TOTAL AREA(ACRES) =    190.77
  LONGEST FLOWPATH FROM NODE  21000.00 TO NODE  21032.00 =  6309.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021032.0 TO NODE LR021043.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1332.00  DOWNSTREAM(FEET) =  1327.00
  FLOW LENGTH(FEET) =   353.61   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  11.00   GIVEN BOX HEIGHT(FEET) =   2.50
  FLOWDEPTH IN BOX IS  1.41 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  13.62
  BOX-FLOW(CFS) =    211.07
  BOX-FLOW TRAVEL TIME(MIN.) =   0.43    Tc(MIN.) =  26.13
  LONGEST FLOWPATH FROM NODE  21000.00 TO NODE  21043.00 =  6662.97 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021043.0 TO NODE LR021043.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  26.13
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.581
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.84      0.75      0.60    56
  SCHOOL                     B        2.77      0.75      0.60    56
  COMMERCIAL                 B        2.00      0.75      0.10    56
  MOBILE HOME PARK           B        6.89      0.75      0.25    56
  PUBLIC PARK                B        1.56      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.41
  SUBAREA AREA(ACRES) =   16.06      SUBAREA RUNOFF(CFS) =   18.40
  EFFECTIVE AREA(ACRES) =    201.39   AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.45
  TOTAL AREA(ACRES) =    206.83       PEAK FLOW RATE(CFS) =     224.96
```

```
 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    225.10  26.11    1.582  0.75( 0.34) 0.45   201.4 LR021020.0
     2    220.79  27.59    1.530  0.75( 0.34) 0.46   206.3 LR021010.0
     3    219.52  27.88    1.521  0.75( 0.34) 0.46   206.8 LR021000.0
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    225.10  Tc(MIN.) =  26.11
 AREA-AVERAGED Fm(INCH/HR) =  0.34  AREA-AVERAGED Fp(INCH/HR) =  0.75
 AREA-AVERAGED Ap =  0.45  EFFECTIVE AREA(ACRES) =    201.39

****************************************************************************
 FLOW PROCESS FROM NODE LR021043.0 TO NODE LR021043.0 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  26.11
 RAINFALL INTENSITY(INCH/HR) =   1.58
 AREA-AVERAGED Fm(INCH/HR) =  0.34
 AREA-AVERAGED Fp(INCH/HR) =  0.75
 AREA-AVERAGED Ap =  0.45
 EFFECTIVE STREAM AREA(ACRES) =   201.39
 TOTAL STREAM AREA(ACRES) =   206.83
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    225.10

****************************************************************************
 FLOW PROCESS FROM NODE LR021040.0 TO NODE LR021041.0 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   905.71
 ELEVATION DATA: UPSTREAM(FEET) =   1358.00  DOWNSTREAM(FEET) =   1350.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.925
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.531
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                 B        7.08      0.75      0.10    56   11.92
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        4.20      0.75      0.60    56   16.16
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.29
 SUBAREA RUNOFF(CFS) =     23.52
 TOTAL AREA(ACRES) =     11.28   PEAK FLOW RATE(CFS) =     23.52

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

****************************************************************************
```



```
 FLOW PROCESS FROM NODE LR021041.0 TO NODE LR021042.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1350.00  DOWNSTREAM ELEVATION(FEET) = 1341.00
 STREET LENGTH(FEET) =   642.50   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      33.04
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.54
  HALFSTREET FLOOD WIDTH(FEET) =   20.21
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.71
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.02
 STREET FLOW TRAVEL TIME(MIN.) =   2.89   Tc(MIN.) =  14.81
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.222
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        4.00      0.75      0.60    56
 COMMERCIAL                 B        5.39      0.75      0.10    56
 SCHOOL                     B        1.37      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.35
 SUBAREA AREA(ACRES) =   10.76      SUBAREA RUNOFF(CFS) =   18.99
 EFFECTIVE AREA(ACRES) =     22.04    AREA-AVERAGED Fm(INCH/HR) =  0.24
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.32
 TOTAL AREA(ACRES) =     22.04        PEAK FLOW RATE(CFS) =      39.38

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.57   HALFSTREET FLOOD WIDTH(FEET) =  21.55
 FLOW VELOCITY(FEET/SEC.) =  3.93   DEPTH*VELOCITY(FT*FT/SEC.) =   2.24
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  642.5 FT WITH ELEVATION-DROP =   9.0 FT, IS   25.6 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21042.00
 LONGEST FLOWPATH FROM NODE  21040.00 TO NODE  21042.00 =  1548.21 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021042.0 TO NODE LR021043.0 IS CODE =  48
----------------------------------------------------------------------------
 >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
```

```
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1341.00  DOWNSTREAM(FEET) =  1327.00
  FLOW LENGTH(FEET) =   896.68   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   5.00   GIVEN BOX HEIGHT(FEET) =   3.00
  FLOWDEPTH IN BOX IS  0.82 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =   9.61
  BOX-FLOW(CFS) =     39.38
  BOX-FLOW TRAVEL TIME(MIN.) =   1.55    Tc(MIN.) =  16.36
  LONGEST FLOWPATH FROM NODE  21040.00 TO NODE  21043.00 =  2444.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021043.0 TO NODE LR021043.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN) =  16.36
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.093
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.11      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.51      0.75      0.60    56
  SCHOOL                     B        2.94      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.59
  SUBAREA AREA(ACRES) =    5.56      SUBAREA RUNOFF(CFS) =    8.27
  EFFECTIVE AREA(ACRES) =     27.60   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.37
  TOTAL AREA(ACRES) =     27.60       PEAK FLOW RATE(CFS) =      45.08

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

****************************************************************************
  FLOW PROCESS FROM NODE LR021043.0 TO NODE LR021043.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==========================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  16.36
  RAINFALL INTENSITY(INCH/HR) =   2.09
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.37
  EFFECTIVE STREAM AREA(ACRES) =    27.60
  TOTAL STREAM AREA(ACRES) =    27.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     45.08

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    225.10  26.11    1.582  0.75( 0.34) 0.45   201.4 LR021020.0
      1    220.79  27.59    1.530  0.75( 0.34) 0.46   206.3 LR021010.0
      1    219.52  27.88    1.521  0.75( 0.34) 0.46   206.8 LR021000.0
      2     45.08  16.36    2.093  0.75( 0.28) 0.37    27.6 LR021040.0
```



```
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    244.30  16.36    2.093  0.75( 0.33) 0.44   153.8 LR021040.0
      2    257.47  26.11    1.582  0.75( 0.33) 0.44   229.0 LR021020.0
      3    251.89  27.59    1.530  0.75( 0.33) 0.45   233.9 LR021010.0
      4    250.38  27.88    1.521  0.75( 0.33) 0.45   234.4 LR021000.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    257.47    Tc(MIN.) =    26.11
  EFFECTIVE AREA(ACRES) =   228.99   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.44
  TOTAL AREA(ACRES) =    234.43
  LONGEST FLOWPATH FROM NODE  21000.00 TO NODE  21043.00 =  6662.97 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021043.0 TO NODE LR021044.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1327.00  DOWNSTREAM(FEET) =  1318.00
  FLOW LENGTH(FEET) =   665.51   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  12.00   GIVEN BOX HEIGHT(FEET) =   2.50
  FLOWDEPTH IN BOX IS  1.52 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  14.09
  BOX-FLOW(CFS) =    257.47
  BOX-FLOW TRAVEL TIME(MIN.) =   0.79    Tc(MIN.) =  26.90
  LONGEST FLOWPATH FROM NODE  21000.00 TO NODE  21044.00 =  7328.48 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021044.0 TO NODE LR021044.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN) =  26.90
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.554
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.70      0.75      0.60    56
  COMMERCIAL                 B       13.39      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.23
  SUBAREA AREA(ACRES) =   18.09      SUBAREA RUNOFF(CFS) =   22.49
  EFFECTIVE AREA(ACRES) =    247.08   AREA-AVERAGED Fm(INCH/HR) =  0.32
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.43
  TOTAL AREA(ACRES) =    252.52       PEAK FLOW RATE(CFS) =     274.21

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
```

```
      1    266.85  17.13    2.037  0.75( 0.31) 0.42   171.9 LR021040.0
      2    274.82  26.82    1.556  0.75( 0.32) 0.43   247.1 LR021020.0
      3    268.97  28.27    1.508  0.75( 0.32) 0.43   252.0 LR021010.0
      4    267.61  28.52    1.500  0.75( 0.32) 0.43   252.5 LR021000.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    274.82  Tc(MIN.) =  26.82
  AREA-AVERAGED Fm(INCH/HR) =  0.32  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.43  EFFECTIVE AREA(ACRES) =    247.08

****************************************************************************
  FLOW PROCESS FROM NODE LR021044.0 TO NODE LR021044.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020968.0 TO NODE LR020968.0 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20968.dna
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     4416.08    Tc(MIN.) =  54.43
  AREA-AVERAGED Fm(INCH/HR) =  0.52    Ybar = 0.56
  TOTAL AREA(ACRES) =   10106.93
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20968.00 = 37082.74 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020968.0 TO NODE LR020968.0 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     4416.08    Tc(MIN.) =  54.43
  AREA-AVERAGED Fm(INCH/HR) =  0.52    Ybar = 0.56
  TOTAL AREA(ACRES) =   10106.93
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20968.00 = 37082.74 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020968.0 TO NODE LR020968.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020968.0 TO NODE LR021044.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1335.00  DOWNSTREAM(FEET) =  1318.00
  FLOW LENGTH(FEET) =  1136.29   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  23.00   GIVEN BOX HEIGHT(FEET) =  10.00
  FLOWDEPTH IN BOX IS  5.95 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  32.28
  BOX-FLOW(CFS) =   4416.08
  BOX-FLOW TRAVEL TIME(MIN.) =   0.59    Tc(MIN.) =  55.02
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21044.00 = 38219.03 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR021044.0 TO NODE LR021044.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     4416.08    Tc(MIN.) =  55.02
  AREA-AVERAGED Fm(INCH/HR) =  0.52    Ybar = 0.56
  TOTAL AREA(ACRES) =   10106.93
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21044.00 = 38219.03 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    266.85  17.13    2.037  0.75( 0.31) 0.42   171.9 LR021040.0
      2    274.82  26.82    1.556  0.75( 0.32) 0.43   247.1 LR021020.0
      3    268.97  28.27    1.508  0.75( 0.32) 0.43   252.0 LR021010.0
      4    267.61  28.52    1.500  0.75( 0.32) 0.43   252.5 LR021000.0
  LONGEST FLOWPATH FROM NODE  21000.00 TO NODE  21044.00 =  7328.48 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.74;1H= 0.98;3H= 1.70;6H= 2.41;24H= 5.20
  S-GRAPH: VALLEY(DEV.)= 69.9%;VALLEY(UNDEV.)/DESERT= 30.1%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.92; LAG(HR) = 0.73; Fm(INCH/HR) = 0.51; Ybar = 0.55
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.67; 30M = 0.67; 1HR = 0.67;
  3HR = 0.94; 6HR = 0.97; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  10359.45
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21044.00 = 38219.03 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0307; Lca/L=0.4,n=.0275; Lca/L=0.5,n=.0253;Lca/L=0.6,n=.0236
  TIME OF PEAK FLOW(HR) = 16.75  RUNOFF VOLUME(AF) =    2043.43
  PEAK FLOW RATE(CFS) =    4474.45

****************************************************************************
  FLOW PROCESS FROM NODE LR021044.0 TO NODE LR021044.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021044.0 TO NODE LR021045.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1318.00  DOWNSTREAM(FEET) =   1295.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1385.05   CHANNEL SLOPE =  0.0166
  CHANNEL BASE(FEET) =   15.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   7.50
  CHANNEL FLOW THRU SUBAREA(CFS) =   4474.45
  FLOW VELOCITY(FEET/SEC.) =  30.40   FLOW DEPTH(FEET) =   5.61
  TRAVEL TIME(MIN.) =   0.76   Tc(MIN.) =  55.78
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21045.00 = 39604.08 FEET.
```

```
**************************************************************************
 FLOW PROCESS FROM NODE LR021045.0 TO NODE LR021045.0 IS CODE =  81
--------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
 MAINLINE Tc(MIN) =  55.78
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.003
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       A       25.15      0.98      0.50    32
 COMMERCIAL                 A       34.08      0.98      0.10    32
 SCHOOL                     A        9.02      0.98      0.60    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        6.36      0.98      0.60    32
 COMMERCIAL                 B       60.62      0.75      0.10    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       23.64      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.87
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.29
 SUBAREA AREA(ACRES) =  158.87
 UNIT-HYDROGRAPH DATA:
 RAINFALL(INCH): 5M= 0.36;30M= 0.74;1H= 0.98;3H= 1.70;6H= 2.41;24H= 5.19
 S-GRAPH: VALLEY(DEV.)= 70.3%;VALLEY(UNDEV.)/DESERT= 29.7%
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
 Tc(HR) = 0.93; LAG(HR) = 0.74; Fm(INCH/HR) = 0.51; Ybar = 0.55
 USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
 DEPTH-AREA FACTORS: 5M = 0.66; 30M = 0.67; 1HR = 0.67;
 3HR = 0.94; 6HR = 0.97; 24HR= 0.98
 UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  10518.32
 LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21045.00 = 39604.08 FEET.
  EQUIVALENT BASIN FACTOR APPROXIMATIONS:
  Lca/L=0.3,n=.0302; Lca/L=0.4,n=.0270; Lca/L=0.5,n=.0248;Lca/L=0.6,n=.0232
 TIME OF PEAK FLOW(HR) = 16.75  RUNOFF VOLUME(AF) =    2082.80
 UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   4489.79
 TOTAL AREA(ACRES) =  10518.32       PEAK FLOW RATE(CFS) =    4489.79

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

**************************************************************************
 FLOW PROCESS FROM NODE LR021045.0 TO NODE LR021046.0 IS CODE =  54
--------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1295.00  DOWNSTREAM(FEET) =   1250.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2744.77   CHANNEL SLOPE =  0.0164
 CHANNEL BASE(FEET) =   15.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   7.50
 CHANNEL FLOW THRU SUBAREA(CFS) =   4489.79
 FLOW VELOCITY(FEET/SEC.) =  30.27   FLOW DEPTH(FEET) =   5.64
 TRAVEL TIME(MIN.) =   1.51   Tc(MIN.) =  57.29
 LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21046.00 = 42348.85 FEET.

**************************************************************************
```



```
 FLOW PROCESS FROM NODE LR021046.0 TO NODE LR021046.0 IS CODE =  81
--------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
 MAINLINE Tc(MIN) =  57.29
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.987
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 A       22.52      0.98      0.10    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        7.83      0.98      0.60    32
 COMMERCIAL                 B       38.49      0.75      0.10    56
 PUBLIC PARK                A        8.61      0.98      0.85    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        4.45      0.75      0.60    56
 MOBILE HOME PARK           B        0.52      0.75      0.25    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.90
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.25
 SUBAREA AREA(ACRES) =   82.42
 UNIT-HYDROGRAPH DATA:
 RAINFALL(INCH): 5M= 0.36;30M= 0.74;1H= 0.98;3H= 1.70;6H= 2.41;24H= 5.18
 S-GRAPH: VALLEY(DEV.)= 70.6%;VALLEY(UNDEV.)/DESERT= 29.4%
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
 Tc(HR) = 0.95; LAG(HR) = 0.76; Fm(INCH/HR) = 0.51; Ybar = 0.55
 USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
 DEPTH-AREA FACTORS: 5M = 0.66; 30M = 0.67; 1HR = 0.67;
 3HR = 0.94; 6HR = 0.97; 24HR= 0.98
 UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  10600.74
 LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21046.00 = 42348.85 FEET.
  EQUIVALENT BASIN FACTOR APPROXIMATIONS:
  Lca/L=0.3,n=.0292; Lca/L=0.4,n=.0262; Lca/L=0.5,n=.0240;Lca/L=0.6,n=.0224
 TIME OF PEAK FLOW(HR) = 16.83  RUNOFF VOLUME(AF) =    2103.91
 UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   4494.66
 TOTAL AREA(ACRES) =  10600.74       PEAK FLOW RATE(CFS) =    4494.66

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

**************************************************************************
 FLOW PROCESS FROM NODE LR021046.0 TO NODE LR021069.0 IS CODE =  54
--------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1250.00  DOWNSTREAM(FEET) =   1215.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2718.03   CHANNEL SLOPE =  0.0129
 CHANNEL BASE(FEET) =   18.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   9.00
 CHANNEL FLOW THRU SUBAREA(CFS) =   4494.66
 FLOW VELOCITY(FEET/SEC.) =  27.40   FLOW DEPTH(FEET) =   5.61
 TRAVEL TIME(MIN.) =   1.65   Tc(MIN.) =  58.94
 LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21069.00 = 45066.88 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE LR021069.0 TO NODE LR021069.0 IS CODE =  81
--------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
```

```
==========================================================================
  MAINLINE Tc(MIN) =  58.94
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.970
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.29      0.75      0.60    56
  COMMERCIAL                 B       24.38      0.75      0.10    56
  COMMERCIAL                 A        9.45      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.36      0.98      0.60    32
  PUBLIC PARK                A        5.30      0.98      0.85    32
  PUBLIC PARK                B        0.69      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.27
  SUBAREA AREA(ACRES) =   46.47
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.74;1H= 0.98;3H= 1.70;6H= 2.40;24H= 5.18
  S-GRAPH: VALLEY(DEV.)= 70.7%;VALLEY(UNDEV.)/DESERT= 29.3%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.98; LAG(HR) = 0.79; Fm(INCH/HR) = 0.51; Ybar = 0.55
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.66; 30M = 0.67; 1HR = 0.67;
  3HR = 0.94; 6HR = 0.97; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  10647.21
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21069.00 = 45066.88 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0284; Lca/L=0.4,n=.0255; Lca/L=0.5,n=.0234;Lca/L=0.6,n=.0218
  TIME OF PEAK FLOW(HR) = 16.83  RUNOFF VOLUME(AF) =    2115.75
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   4502.12
  TOTAL AREA(ACRES) =  10647.21       PEAK FLOW RATE(CFS) =    4502.12

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

**************************************************************************
  FLOW PROCESS FROM NODE LR021069.0 TO NODE LR021069.0 IS CODE =  10
--------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
==========================================================================

**************************************************************************
  FLOW PROCESS FROM NODE LR021050.0 TO NODE LR021050.5 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   520.56
  ELEVATION DATA: UPSTREAM(FEET) =   1255.00  DOWNSTREAM(FEET) =   1250.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.396
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.920
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
```



```
  "5-7 DWELLINGS/ACRE"       A        2.98      0.98      0.50    32   12.02
  COMMERCIAL                 A        5.49      0.98      0.10    32    9.40
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.85      0.98      0.60    32   12.73
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.27
  SUBAREA RUNOFF(CFS) =     22.26
  TOTAL AREA(ACRES) =      9.32   PEAK FLOW RATE(CFS) =     22.26

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

**************************************************************************
  FLOW PROCESS FROM NODE LR021050.5 TO NODE LR021051.0 IS CODE =  63
--------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
==========================================================================
  UPSTREAM ELEVATION(FEET) = 1250.00  DOWNSTREAM ELEVATION(FEET) = 1246.00
  STREET LENGTH(FEET) =   343.10   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      32.28
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.55
    HALFSTREET FLOOD WIDTH(FEET) =   20.70
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.47
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.92
  STREET FLOW TRAVEL TIME(MIN.) =   1.65   Tc(MIN.) =  11.04
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.650
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        2.98      0.98      0.50    32
  COMMERCIAL                 A        5.50      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.85      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.27
  SUBAREA AREA(ACRES) =    9.33      SUBAREA RUNOFF(CFS) =   20.02
  EFFECTIVE AREA(ACRES) =     18.65    AREA-AVERAGED Fm(INCH/HR) =  0.27
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.27
  TOTAL AREA(ACRES) =     18.65        PEAK FLOW RATE(CFS) =      40.01

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26
```

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  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.59   HALFSTREET FLOOD WIDTH(FEET) =  22.41
  FLOW VELOCITY(FEET/SEC.) =  3.71   DEPTH*VELOCITY(FT*FT/SEC.) =   2.18
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  343.1 FT WITH ELEVATION-DROP =   4.0 FT, IS   25.5 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21051.00
  LONGEST FLOWPATH FROM NODE  21050.00 TO NODE  21051.00 =   863.66 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021051.0 TO NODE LR021052.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1246.00  DOWNSTREAM ELEVATION(FEET) = 1236.00
  STREET LENGTH(FEET) =   756.64   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      59.97
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.65
    HALFSTREET FLOOD WIDTH(FEET) =   25.46
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.38
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.84
  STREET FLOW TRAVEL TIME(MIN.) =   2.88   Tc(MIN.) =  13.92
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.306
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        1.87      0.98      0.50    32
  COMMERCIAL                 A       17.40      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.43      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.17
  SUBAREA AREA(ACRES) =   20.70      SUBAREA RUNOFF(CFS) =   39.86
  EFFECTIVE AREA(ACRES) =     39.35    AREA-AVERAGED Fm(INCH/HR) =  0.21
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.22
  TOTAL AREA(ACRES) =     39.35        PEAK FLOW RATE(CFS) =      74.10

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.69   HALFSTREET FLOOD WIDTH(FEET) =  27.66
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  FLOW VELOCITY(FEET/SEC.) =  4.62   DEPTH*VELOCITY(FT*FT/SEC.) =   3.20
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  756.6 FT WITH ELEVATION-DROP =  10.0 FT, IS   48.6 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21052.00
  LONGEST FLOWPATH FROM NODE  21050.00 TO NODE  21052.00 =  1620.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021052.0 TO NODE LR021067.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1236.00  DOWNSTREAM ELEVATION(FEET) = 1220.00
  STREET LENGTH(FEET) =  1432.84   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     107.40
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.80
    HALFSTREET FLOOD WIDTH(FEET) =   33.03
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.76
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.81
  STREET FLOW TRAVEL TIME(MIN.) =   5.01   Tc(MIN.) =  18.94
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.918
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A       17.32      0.98      0.50    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.30      0.75      0.60    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        5.92      0.75      0.50    56
  COMMERCIAL                 B        6.47      0.75      0.10    56
  COMMERCIAL                 A       13.55      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.00      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.91
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.33
  SUBAREA AREA(ACRES) =   45.56      SUBAREA RUNOFF(CFS) =   66.36
  EFFECTIVE AREA(ACRES) =     84.91    AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.93  AREA-AVERAGED Ap =  0.28
  TOTAL AREA(ACRES) =     84.91        PEAK FLOW RATE(CFS) =     126.70

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26
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  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.85   HALFSTREET FLOOD WIDTH(FEET) =  35.29
  FLOW VELOCITY(FEET/SEC.) =  4.94   DEPTH*VELOCITY(FT*FT/SEC.) =   4.18
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1432.8 FT WITH ELEVATION-DROP =  16.0 FT, IS   83.3 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21067.00
  LONGEST FLOWPATH FROM NODE  21050.00 TO NODE  21067.00 =  3053.14 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021067.0 TO NODE LR021067.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  18.94
  RAINFALL INTENSITY(INCH/HR) =   1.92
  AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.93
  AREA-AVERAGED Ap =  0.28
  EFFECTIVE STREAM AREA(ACRES) =    84.91
  TOTAL STREAM AREA(ACRES) =    84.91
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    126.70

****************************************************************************
  FLOW PROCESS FROM NODE LR021060.0 TO NODE LR021061.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1000.00
  ELEVATION DATA: UPSTREAM(FEET) =   1268.00  DOWNSTREAM(FEET) =   1267.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   19.181
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.903
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        1.55      0.98      0.50    32   24.54
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.16      0.98      0.60    32   26.00
  COMMERCIAL                 A        6.97      0.98      0.10    32   19.18
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.22
  SUBAREA RUNOFF(CFS) =     14.68
  TOTAL AREA(ACRES) =      9.68   PEAK FLOW RATE(CFS) =     14.68

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

****************************************************************************
  FLOW PROCESS FROM NODE LR021061.0 TO NODE LR021062.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
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  UPSTREAM ELEVATION(FEET) = 1267.00  DOWNSTREAM ELEVATION(FEET) = 1266.00
  STREET LENGTH(FEET) =   371.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      21.76
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.66
    HALFSTREET FLOOD WIDTH(FEET) =   24.92
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.70
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.12
  STREET FLOW TRAVEL TIME(MIN.) =   3.64   Tc(MIN.) =  22.82
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.715
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        1.79      0.98      0.50    32
  COMMERCIAL                 A        7.48      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.27      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.23
  SUBAREA AREA(ACRES) =   10.54      SUBAREA RUNOFF(CFS) =   14.16
  EFFECTIVE AREA(ACRES) =     20.22    AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.23
  TOTAL AREA(ACRES) =     20.22        PEAK FLOW RATE(CFS) =      27.19

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.70   HALFSTREET FLOOD WIDTH(FEET) =  27.53
  FLOW VELOCITY(FEET/SEC.) =  1.82   DEPTH*VELOCITY(FT*FT/SEC.) =   1.27
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  371.0 FT WITH ELEVATION-DROP =   1.0 FT, IS   23.7 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21062.00
  LONGEST FLOWPATH FROM NODE  21060.00 TO NODE  21062.00 =  1371.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021062.0 TO NODE LR021063.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1266.00  DOWNSTREAM ELEVATION(FEET) = 1265.00
  STREET LENGTH(FEET) =   228.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00
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  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      31.68
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.68
    HALFSTREET FLOOD WIDTH(FEET) =   26.79
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.24
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.53
  STREET FLOW TRAVEL TIME(MIN.) =   1.70   Tc(MIN.) =  24.52
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.642
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        1.53      0.98      0.50    32
  COMMERCIAL                 A        4.98      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.48      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.22
  SUBAREA AREA(ACRES) =    6.99      SUBAREA RUNOFF(CFS) =    8.97
  EFFECTIVE AREA(ACRES) =     27.21    AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.23
  TOTAL AREA(ACRES) =     27.21        PEAK FLOW RATE(CFS) =      34.85

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.70   HALFSTREET FLOOD WIDTH(FEET) =  27.59
  FLOW VELOCITY(FEET/SEC.) =  2.32   DEPTH*VELOCITY(FT*FT/SEC.) =   1.62
  LONGEST FLOWPATH FROM NODE  21060.00 TO NODE  21063.00 =  1599.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021063.0 TO NODE LR021064.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1265.00  DOWNSTREAM ELEVATION(FEET) = 1258.00
  STREET LENGTH(FEET) =   323.58   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
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  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.91

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      40.87
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.58
    HALFSTREET FLOOD WIDTH(FEET) =   21.22
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.35
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.54
  STREET FLOW TRAVEL TIME(MIN.) =   1.24   Tc(MIN.) =  25.75
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.595
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        4.16      0.98      0.50    32
  COMMERCIAL                 A        5.34      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.77      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.30
  SUBAREA AREA(ACRES) =   10.27      SUBAREA RUNOFF(CFS) =   12.04
  EFFECTIVE AREA(ACRES) =     37.48    AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.25
  TOTAL AREA(ACRES) =     37.48        PEAK FLOW RATE(CFS) =      45.72

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.60   HALFSTREET FLOOD WIDTH(FEET) =  22.16
  FLOW VELOCITY(FEET/SEC.) =  4.48   DEPTH*VELOCITY(FT*FT/SEC.) =   2.70
  LONGEST FLOWPATH FROM NODE  21060.00 TO NODE  21064.00 =  1923.08 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021064.0 TO NODE LR021065.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1258.00  DOWNSTREAM ELEVATION(FEET) = 1254.00
  STREET LENGTH(FEET) =   294.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.03

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      50.96
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.66
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  HALFSTREET FLOOD WIDTH(FEET) =   25.33
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.86
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.57
STREET FLOW TRAVEL TIME(MIN.) =   1.27   Tc(MIN.) =  27.03
*  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.549
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"5-7 DWELLINGS/ACRE"       A        4.73      0.98      0.50    32
COMMERCIAL                 A        3.54      0.98      0.10    32
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       A        1.55      0.98      0.60    32
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.37
SUBAREA AREA(ACRES) =    9.82      SUBAREA RUNOFF(CFS) =   10.49
EFFECTIVE AREA(ACRES) =     47.30    AREA-AVERAGED Fm(INCH/HR) =  0.26
AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.27
TOTAL AREA(ACRES) =     47.30        PEAK FLOW RATE(CFS) =      54.67

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.68   HALFSTREET FLOOD WIDTH(FEET) =  26.61
FLOW VELOCITY(FEET/SEC.) =  3.92   DEPTH*VELOCITY(FT*FT/SEC.) =   2.66
LONGEST FLOWPATH FROM NODE  21060.00 TO NODE  21065.00 =  2217.58 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021065.0 TO NODE LR021066.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1254.00  DOWNSTREAM ELEVATION(FEET) = 1230.00
 STREET LENGTH(FEET) =  1452.00   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.97

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      58.73
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.67
   HALFSTREET FLOOD WIDTH(FEET) =   26.17
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.29
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.89
 STREET FLOW TRAVEL TIME(MIN.) =   5.64   Tc(MIN.) =  32.67
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.383
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
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     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       A        2.04      0.98      0.60    32
COMMERCIAL                 A        5.75      0.98      0.10    32
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.23
SUBAREA AREA(ACRES) =    7.79      SUBAREA RUNOFF(CFS) =    8.11
EFFECTIVE AREA(ACRES) =     55.09    AREA-AVERAGED Fm(INCH/HR) =  0.26
AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.27
TOTAL AREA(ACRES) =     55.09        PEAK FLOW RATE(CFS) =      55.70

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.66   HALFSTREET FLOOD WIDTH(FEET) =  25.27
FLOW VELOCITY(FEET/SEC.) =  4.24   DEPTH*VELOCITY(FT*FT/SEC.) =   2.81
LONGEST FLOWPATH FROM NODE  21060.00 TO NODE  21066.00 =  3669.58 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021066.0 TO NODE LR021067.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1230.00  DOWNSTREAM ELEVATION(FEET) = 1220.00
 STREET LENGTH(FEET) =   858.50   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      57.07
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.70
   HALFSTREET FLOOD WIDTH(FEET) =   27.59
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.81
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.66
 STREET FLOW TRAVEL TIME(MIN.) =   3.76   Tc(MIN.) =  36.43
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.295
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
COMMERCIAL                 B        1.85      0.75      0.10    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        0.05      0.75      0.60    56
COMMERCIAL                 A        0.62      0.98      0.10    32
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.11
SUBAREA AREA(ACRES) =    2.52      SUBAREA RUNOFF(CFS) =    2.74
```

```
  EFFECTIVE AREA(ACRES) =     57.61    AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.26
  TOTAL AREA(ACRES) =     57.61        PEAK FLOW RATE(CFS) =      55.70
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.69   HALFSTREET FLOOD WIDTH(FEET) =  27.40
  FLOW VELOCITY(FEET/SEC.) =  3.76   DEPTH*VELOCITY(FT*FT/SEC.) =   2.62
  LONGEST FLOWPATH FROM NODE  21060.00 TO NODE  21067.00 =  4528.08 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021067.0 TO NODE LR021067.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  36.43
  RAINFALL INTENSITY(INCH/HR) =   1.30
  AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.97
  AREA-AVERAGED Ap =  0.26
  EFFECTIVE STREAM AREA(ACRES) =    57.61
  TOTAL STREAM AREA(ACRES) =    57.61
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     55.70

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    126.70  18.94    1.918  0.93( 0.26) 0.28    84.9 LR021050.0
      2     55.70  36.43    1.295  0.97( 0.25) 0.26    57.6 LR021060.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    172.93  18.94    1.918  0.94( 0.26) 0.27   114.9 LR021050.0
      2    134.82  36.43    1.295  0.95( 0.26) 0.27   142.5 LR021060.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    172.93    Tc(MIN.) =    18.94
  EFFECTIVE AREA(ACRES) =   114.86   AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.94  AREA-AVERAGED Ap =  0.27
  TOTAL AREA(ACRES) =    142.52
  LONGEST FLOWPATH FROM NODE  21060.00 TO NODE  21067.00 =  4528.08 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021067.0 TO NODE LR021068.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
```



```
  UPSTREAM NODE ELEVATION(FEET) =  1220.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1217.50
  FLOW LENGTH(FEET) =  1347.88   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  84.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  84.0 INCH PIPE IS  48.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.55
  PIPE-FLOW(CFS) =    172.93
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   3.17    Tc(MIN.) =  22.11
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.748
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        7.32      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.09      0.75      0.60    56
  COMMERCIAL                 A       15.30      0.98      0.10    32
  COMMERCIAL                 B       41.62      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.85
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.19
  SUBAREA AREA(ACRES) =   69.33      SUBAREA RUNOFF(CFS) =   98.99
  EFFECTIVE AREA(ACRES) =    184.19    AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.92  AREA-AVERAGED Ap =  0.24
  TOTAL AREA(ACRES) =    211.85        PEAK FLOW RATE(CFS) =    253.02

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 39.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  *NOTE: STREET-CAPACITY MAY BE EXCEEDED*
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   80.10
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.00
    HALFSTREET FLOOD WIDTH(FEET) =   55.72
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.94
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.94
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  1347.9 FT WITH ELEVATION-DROP =   2.5 FT, IS  109.0 CFS,
         WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  21068.00

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    253.02  22.11    1.748  0.92( 0.22) 0.24   184.2 LR021050.0
      2    191.26  39.79    1.228  0.92( 0.23) 0.24   211.9 LR021060.0
```

```
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    253.02  Tc(MIN.) =  22.11
  AREA-AVERAGED Fm(INCH/HR) =  0.22  AREA-AVERAGED Fp(INCH/HR) =  0.92
  AREA-AVERAGED Ap =  0.24  EFFECTIVE AREA(ACRES) =    184.19
  LONGEST FLOWPATH FROM NODE  21060.00 TO NODE  21068.00 =  5875.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021068.0 TO NODE LR021069.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1217.50
  DOWNSTREAM NODE ELEVATION(FEET) =  1215.00
  FLOW LENGTH(FEET) =  1146.78   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  93.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  93.0 INCH PIPE IS  54.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.82
  PIPE-FLOW(CFS) =    253.02
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   2.31    Tc(MIN.) =  24.42
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.647
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.21      0.75      0.60    56
  COMMERCIAL                 B       33.09      0.75      0.10    56
  PUBLIC PARK                B        0.04      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.12
  SUBAREA AREA(ACRES) =   34.34      SUBAREA RUNOFF(CFS) =   48.15
  EFFECTIVE AREA(ACRES) =    218.53    AREA-AVERAGED Fm(INCH/HR) =  0.23
  AREA-AVERAGED Fp(INCH/HR) =  0.91  AREA-AVERAGED Ap =  0.26
  TOTAL AREA(ACRES) =    246.19        PEAK FLOW RATE(CFS) =    278.14

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 39.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   25.12
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.71
    HALFSTREET FLOOD WIDTH(FEET) =   29.38
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.62
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.15
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
```



```
        AND L =  1146.8 FT WITH ELEVATION-DROP =   2.5 FT, IS   59.8 CFS,
        WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  21069.00

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    284.41  24.42    1.647  0.90( 0.20) 0.22   218.5 LR021050.0
      2    216.85  42.25    1.185  0.91( 0.21) 0.23   246.2 LR021060.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    284.41  Tc(MIN.) =  24.42
  AREA-AVERAGED Fm(INCH/HR) =  0.20  AREA-AVERAGED Fp(INCH/HR) =  0.90
  AREA-AVERAGED Ap =  0.22  EFFECTIVE AREA(ACRES) =    218.53
  LONGEST FLOWPATH FROM NODE  21060.00 TO NODE  21069.00 =  7022.74 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021069.0 TO NODE LR021069.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    284.41  24.42    1.647  0.90( 0.20) 0.22   218.5 LR021050.0
      2    216.85  42.25    1.185  0.91( 0.21) 0.23   246.2 LR021060.0
  LONGEST FLOWPATH FROM NODE  21060.00 TO NODE  21069.00 =  7022.74 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     4502.12    Tc(MIN.) =  58.94
  AREA-AVERAGED Fm(INCH/HR) =  0.51    Ybar = 0.55
  TOTAL AREA(ACRES) =   10647.21
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21069.00 = 45066.88 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.74;1H= 0.98;3H= 1.69;6H= 2.40;24H= 5.16
  S-GRAPH: VALLEY(DEV.)= 71.4%;VALLEY(UNDEV.)/DESERT= 28.6%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.98; LAG(HR) = 0.79; Fm(INCH/HR) = 0.50; Ybar = 0.54
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.66; 30M = 0.66; 1HR = 0.67;
  3HR = 0.94; 6HR = 0.97; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  10893.40
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21069.00 = 45066.88 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0284; Lca/L=0.4,n=.0255; Lca/L=0.5,n=.0234;Lca/L=0.6,n=.0218
  TIME OF PEAK FLOW(HR) = 16.83  RUNOFF VOLUME(AF) =    2180.92
  PEAK FLOW RATE(CFS) =    4619.03

****************************************************************************
  FLOW PROCESS FROM NODE LR021069.0 TO NODE LR021069.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021069.0 TO NODE LR021070.0 IS CODE =  54
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1215.00  DOWNSTREAM(FEET) =   1183.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2795.47   CHANNEL SLOPE =  0.0114
  CHANNEL BASE(FEET) =   18.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   9.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   4619.03
  FLOW VELOCITY(FEET/SEC.) =  26.46   FLOW DEPTH(FEET) =   5.87
  TRAVEL TIME(MIN.) =   1.76   Tc(MIN.) =  60.70
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21070.00 = 47862.35 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021070.0 TO NODE LR021070.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  60.70
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.953
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B      108.13      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       17.27      0.75      0.60    56
  PUBLIC PARK                B        5.11      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.20
  SUBAREA AREA(ACRES) =  130.51
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.74;1H= 0.98;3H= 1.69;6H= 2.40;24H= 5.14
  S-GRAPH: VALLEY(DEV.)= 71.7%;VALLEY(UNDEV.)/DESERT= 28.3%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 1.01; LAG(HR) = 0.81; Fm(INCH/HR) = 0.50; Ybar = 0.54
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.65; 30M = 0.66; 1HR = 0.67;
  3HR = 0.94; 6HR = 0.97; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  11023.91
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21070.00 = 47862.35 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0277; Lca/L=0.4,n=.0249; Lca/L=0.5,n=.0228;Lca/L=0.6,n=.0213
  TIME OF PEAK FLOW(HR) = 16.83  RUNOFF VOLUME(AF) =    2218.40
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   4597.34
  TOTAL AREA(ACRES) =  11023.91       PEAK FLOW RATE(CFS) =    4619.03
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.59; 6HR = 2.19; 24HR = 4.26

****************************************************************************
  FLOW PROCESS FROM NODE LR021070.0 TO NODE LR021070.0 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 21070.dna
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =  11023.91  TC(MIN.) =     60.70
```



```
  AREA-AVERAGED Fm(INCH/HR)=  0.50   Ybar =  0.54
  PEAK FLOW RATE(CFS)   =   4619.03
================================================================================
================================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
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                          Analysis prepared by:

                          San Bernardino County
                    Transportation/ Flood Control Department

                          Water Resources Division

 ************************* DESCRIPTION OF STUDY *************************
* LR 0211ZZ FILE                                                       *
*  25-YEAR STORM                                                       *
*                                                                      *
 ************************************************************************

  FILE NAME: LR0211ZZ.Z25
  TIME/DATE OF STUDY: 11:26 02/23/2006
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 0.9600

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
```



```
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


************************************************************************
  FLOW PROCESS FROM NODE LR021100.0 TO NODE LR021101.0 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   678.31
  ELEVATION DATA: UPSTREAM(FEET) =   1870.00  DOWNSTREAM(FEET) =   1820.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.418
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.916
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.91      0.75       0.60    56    9.42
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.56      0.75       0.70    56   10.01
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA RUNOFF(CFS) =     16.15
  TOTAL AREA(ACRES) =      7.47   PEAK FLOW RATE(CFS) =     16.15

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

************************************************************************
  FLOW PROCESS FROM NODE LR021101.0 TO NODE LR021102.0 IS CODE =  54
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1820.00  DOWNSTREAM(FEET) =   1770.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   733.55   CHANNEL SLOPE =  0.0682
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   5.000
```

```
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     16.15
  FLOW VELOCITY(FEET/SEC.) =   4.72   FLOW DEPTH(FEET) =   0.83
  TRAVEL TIME(MIN.) =   2.59   Tc(MIN.) =  12.01
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21102.00 =  1411.86 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021102.0 TO NODE LR021102.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  12.01
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.521
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       10.44      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.19      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   12.63      SUBAREA RUNOFF(CFS) =   22.85
  EFFECTIVE AREA(ACRES) =     20.10   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     20.10       PEAK FLOW RATE(CFS) =      36.34

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

****************************************************************************
  FLOW PROCESS FROM NODE LR021102.0 TO NODE LR021103.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1770.00  DOWNSTREAM(FEET) =   1750.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   514.94   CHANNEL SLOPE =  0.0388
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     36.34
  FLOW VELOCITY(FEET/SEC.) =   4.68   FLOW DEPTH(FEET) =   1.25
  TRAVEL TIME(MIN.) =   1.83   Tc(MIN.) =  13.84
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21103.00 =  1926.80 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021103.0 TO NODE LR021103.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  13.84
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.314
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.23      0.75      0.60    56
  RESIDENTIAL
```



```
  "2 DWELLINGS/ACRE"         B        8.43      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    9.66      SUBAREA RUNOFF(CFS) =   15.65
  EFFECTIVE AREA(ACRES) =     29.76   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     29.76       PEAK FLOW RATE(CFS) =      48.26

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

****************************************************************************
  FLOW PROCESS FROM NODE LR021103.0 TO NODE LR021104.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1750.00  DOWNSTREAM(FEET) =   1715.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   660.67   CHANNEL SLOPE =  0.0530
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     48.26
  FLOW VELOCITY(FEET/SEC.) =   5.65   FLOW DEPTH(FEET) =   1.31
  TRAVEL TIME(MIN.) =   1.95   Tc(MIN.) =  15.79
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21104.00 =  2587.47 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021104.0 TO NODE LR021104.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  15.79
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.138
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       20.18      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.62      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   24.80      SUBAREA RUNOFF(CFS) =   36.36
  EFFECTIVE AREA(ACRES) =     54.56   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     54.56       PEAK FLOW RATE(CFS) =      79.90

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

****************************************************************************
  FLOW PROCESS FROM NODE LR021104.0 TO NODE LR021105.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1715.00  DOWNSTREAM ELEVATION(FEET) = 1705.00
  STREET LENGTH(FEET) =   402.43   CURB HEIGHT(INCHES) =  8.0
```

```
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      82.41
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.70
    HALFSTREET FLOOD WIDTH(FEET) =   27.53
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.52
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.85
  STREET FLOW TRAVEL TIME(MIN.) =   1.22   Tc(MIN.) =  17.01
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.045
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.78      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.85      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    3.63      SUBAREA RUNOFF(CFS) =    5.03
  EFFECTIVE AREA(ACRES) =     58.19    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     58.19        PEAK FLOW RATE(CFS) =      80.36

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.69   HALFSTREET FLOOD WIDTH(FEET) =  27.28
  FLOW VELOCITY(FEET/SEC.) =  5.48   DEPTH*VELOCITY(FT*FT/SEC.) =   3.79
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21105.00 =  2989.90 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021105.0 TO NODE LR021106.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1705.00  DOWNSTREAM ELEVATION(FEET) = 1690.00
  STREET LENGTH(FEET) =   562.31   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
```



```
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.86

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      84.28
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.69
    HALFSTREET FLOOD WIDTH(FEET) =   27.40
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.70
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.96
  STREET FLOW TRAVEL TIME(MIN.) =   1.65   Tc(MIN.) =  18.65
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.935
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.35      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.77      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    6.12      SUBAREA RUNOFF(CFS) =    7.83
  EFFECTIVE AREA(ACRES) =     64.31    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     64.31        PEAK FLOW RATE(CFS) =      82.41

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.69   HALFSTREET FLOOD WIDTH(FEET) =  27.22
  FLOW VELOCITY(FEET/SEC.) =  5.65   DEPTH*VELOCITY(FT*FT/SEC.) =   3.90
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21106.00 =  3552.21 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021106.0 TO NODE LR021107.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1690.00  DOWNSTREAM ELEVATION(FEET) = 1670.00
  STREET LENGTH(FEET) =   483.05   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.77

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      86.87
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
```

```
   STREET FLOW DEPTH(FEET) =  0.66
   HALFSTREET FLOOD WIDTH(FEET) =   25.09
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.70
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.42
  STREET FLOW TRAVEL TIME(MIN.) =   1.20   Tc(MIN.) =  19.85
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.864
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.11      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.21      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    7.32      SUBAREA RUNOFF(CFS) =    8.91
  EFFECTIVE AREA(ACRES) =     71.63    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     71.63        PEAK FLOW RATE(CFS) =      87.21

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.66   HALFSTREET FLOOD WIDTH(FEET) =  25.15
  FLOW VELOCITY(FEET/SEC.) =  6.69   DEPTH*VELOCITY(FT*FT/SEC.) =   4.43
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21107.00 =  4035.26 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021107.0 TO NODE LR021108.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1670.00  DOWNSTREAM ELEVATION(FEET) = 1640.00
  STREET LENGTH(FEET) =   579.31   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.74

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     106.86
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.68
    HALFSTREET FLOOD WIDTH(FEET) =   26.61
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.67
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.20
  STREET FLOW TRAVEL TIME(MIN.) =   1.26   Tc(MIN.) =  21.11
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.796
  SUBAREA LOSS RATE DATA(AMC  II):
```



```
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       28.69      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.30      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   33.99      SUBAREA RUNOFF(CFS) =   39.30
  EFFECTIVE AREA(ACRES) =    105.62    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    105.62        PEAK FLOW RATE(CFS) =     122.15

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.70   HALFSTREET FLOOD WIDTH(FEET) =  27.71
  FLOW VELOCITY(FEET/SEC.) =  8.07   DEPTH*VELOCITY(FT*FT/SEC.) =   5.66
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21108.00 =  4614.57 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021108.0 TO NODE LR021109.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1640.00  DOWNSTREAM ELEVATION(FEET) = 1600.00
  STREET LENGTH(FEET) =  1132.55   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.80

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     134.56
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.75
    HALFSTREET FLOOD WIDTH(FEET) =   30.39
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.37
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.56
  STREET FLOW TRAVEL TIME(MIN.) =   2.56   Tc(MIN.) =  23.67
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.677
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       21.44      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.32      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
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  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =   23.76      SUBAREA RUNOFF(CFS) =   24.83
  EFFECTIVE AREA(ACRES) =    129.38    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =    129.38        PEAK FLOW RATE(CFS) =     135.64

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.76   HALFSTREET FLOOD WIDTH(FEET) =  30.52
  FLOW VELOCITY(FEET/SEC.) =  7.37   DEPTH*VELOCITY(FT*FT/SEC.) =   5.58
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21109.00 =  5747.12 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021109.0 TO NODE LR021110.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1600.00  DOWNSTREAM ELEVATION(FEET) = 1550.00
  STREET LENGTH(FEET) =   761.67   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     139.57
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.70
    HALFSTREET FLOOD WIDTH(FEET) =   27.83
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.14
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.43
  STREET FLOW TRAVEL TIME(MIN.) =   1.39   Tc(MIN.) =  25.06
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.621
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.59      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.29      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    7.88      SUBAREA RUNOFF(CFS) =    7.87
  EFFECTIVE AREA(ACRES) =    137.26    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    137.26        PEAK FLOW RATE(CFS) =     136.94

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
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  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.70   HALFSTREET FLOOD WIDTH(FEET) =  27.71
  FLOW VELOCITY(FEET/SEC.) =  9.05   DEPTH*VELOCITY(FT*FT/SEC.) =   6.34

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.70
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.99
  PIPE-FLOW(CFS) =     53.43
  PIPEFLOW TRAVEL TIME(MIN.) =   0.75    Tc(MIN.) =  24.42
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.646
  SUBAREA AREA(ACRES) =    7.88      SUBAREA RUNOFF(CFS) =    8.05
  TOTAL AREA(ACRES) =    137.26        PEAK FLOW RATE(CFS) =    140.08

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   86.65
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.62
    HALFSTREET FLOOD WIDTH(FEET) =   22.92
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.96
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.91
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21110.00 =  6508.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021110.0 TO NODE LR021129.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1550.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1495.00
  FLOW LENGTH(FEET) =  1519.57   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  24.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  21.88
  PIPE-FLOW(CFS) =    140.08
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.16    Tc(MIN.) =  25.58
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21129.00 =  8028.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021129.0 TO NODE LR021129.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  25.58
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.601
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       21.30      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   21.30      SUBAREA RUNOFF(CFS) =   22.09
  EFFECTIVE AREA(ACRES) =    158.56   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.67
  TOTAL AREA(ACRES) =    158.56       PEAK FLOW RATE(CFS) =     156.60

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

****************************************************************************
  FLOW PROCESS FROM NODE LR021129.0 TO NODE LR021129.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021121.0 TO NODE LR021122.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   969.86
  ELEVATION DATA: UPSTREAM(FEET) =   1830.00  DOWNSTREAM(FEET) =   1770.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.254
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.621
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.27      0.75      0.60    56   11.25
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.70      0.75      0.70    56   11.96
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA RUNOFF(CFS) =     13.24
  TOTAL AREA(ACRES) =      6.97   PEAK FLOW RATE(CFS) =     13.24

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

****************************************************************************
  FLOW PROCESS FROM NODE LR021122.0 TO NODE LR021123.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1770.00  DOWNSTREAM ELEVATION(FEET) = 1700.00
  STREET LENGTH(FEET) =  1318.97   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
```



```
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.66

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      21.83
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.41
    HALFSTREET FLOOD WIDTH(FEET) =   14.05
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.21
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.12
  STREET FLOW TRAVEL TIME(MIN.) =   4.22   Tc(MIN.) =  15.47
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.165
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.67      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       10.86      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =   11.53      SUBAREA RUNOFF(CFS) =   17.08
  EFFECTIVE AREA(ACRES) =     18.50    AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     18.50        PEAK FLOW RATE(CFS) =      27.46

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.43   HALFSTREET FLOOD WIDTH(FEET) =  15.38
  FLOW VELOCITY(FEET/SEC.) =  5.53   DEPTH*VELOCITY(FT*FT/SEC.) =   2.40
  LONGEST FLOWPATH FROM NODE  21121.00 TO NODE  21123.00 =  2288.83 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021123.0 TO NODE LR021124.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1700.00  DOWNSTREAM ELEVATION(FEET) = 1625.00
  STREET LENGTH(FEET) =  1863.96   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      47.41
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    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.52
    HALFSTREET FLOOD WIDTH(FEET) =   19.05
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.93
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.09
  STREET FLOW TRAVEL TIME(MIN.) =   5.24   Tc(MIN.) =  20.71
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.818
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.04      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       29.70      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =   33.74      SUBAREA RUNOFF(CFS) =   39.57
  EFFECTIVE AREA(ACRES) =     52.24    AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     52.24        PEAK FLOW RATE(CFS) =      61.24

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.56   HALFSTREET FLOOD WIDTH(FEET) =  20.88
  FLOW VELOCITY(FEET/SEC.) =  6.48   DEPTH*VELOCITY(FT*FT/SEC.) =   3.61
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1864.0 FT WITH ELEVATION-DROP =  75.0 FT, IS   49.0 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21124.00
  LONGEST FLOWPATH FROM NODE  21121.00 TO NODE  21124.00 =  4152.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021124.0 TO NODE LR021125.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1625.00  DOWNSTREAM ELEVATION(FEET) = 1590.00
  STREET LENGTH(FEET) =   472.91   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.63

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      63.88
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.52
    HALFSTREET FLOOD WIDTH(FEET) =   18.99
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    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.04
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.18
  STREET FLOW TRAVEL TIME(MIN.) =   0.98   Tc(MIN.) =  21.69
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.768
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.00      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.67      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    4.67      SUBAREA RUNOFF(CFS) =    5.27
  EFFECTIVE AREA(ACRES) =     56.91    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     56.91        PEAK FLOW RATE(CFS) =      64.18

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.52   HALFSTREET FLOOD WIDTH(FEET) =  19.05
  FLOW VELOCITY(FEET/SEC.) =  8.03   DEPTH*VELOCITY(FT*FT/SEC.) =   4.18
  LONGEST FLOWPATH FROM NODE  21121.00 TO NODE  21125.00 =  4625.70 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021125.0 TO NODE LR021126.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1590.00  DOWNSTREAM ELEVATION(FEET) = 1570.00
  STREET LENGTH(FEET) =   502.51   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      67.34
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.57
    HALFSTREET FLOOD WIDTH(FEET) =   21.68
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.65
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.81
  STREET FLOW TRAVEL TIME(MIN.) =   1.26   Tc(MIN.) =  22.95
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.709
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
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```
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.19      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.64      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA AREA(ACRES) =    5.83      SUBAREA RUNOFF(CFS) =    6.33
  EFFECTIVE AREA(ACRES) =     62.74    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     62.74        PEAK FLOW RATE(CFS) =      67.49

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.57   HALFSTREET FLOOD WIDTH(FEET) =  21.68
  FLOW VELOCITY(FEET/SEC.) =  6.66   DEPTH*VELOCITY(FT*FT/SEC.) =   3.82
  LONGEST FLOWPATH FROM NODE  21121.00 TO NODE  21126.00 =  5128.21 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021126.0 TO NODE LR021126.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  22.95
  RAINFALL INTENSITY(INCH/HR) =   1.71
  AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.69
  EFFECTIVE STREAM AREA(ACRES) =    62.74
  TOTAL STREAM AREA(ACRES) =    62.74
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     67.49

****************************************************************************
  FLOW PROCESS FROM NODE LR021150.0 TO NODE LR021151.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   912.75
  ELEVATION DATA: UPSTREAM(FEET) =   1700.00  DOWNSTREAM(FEET) =   1685.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.318
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.268
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.53      0.75      0.70    56   15.22
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.32      0.75      0.60    56   14.32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA RUNOFF(CFS) =     10.78
  TOTAL AREA(ACRES) =      6.85   PEAK FLOW RATE(CFS) =     10.78
```



```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

****************************************************************************
  FLOW PROCESS FROM NODE LR021151.0 TO NODE LR021152.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1685.00  DOWNSTREAM ELEVATION(FEET) = 1630.00
  STREET LENGTH(FEET) =   659.39   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.59

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      19.70
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.37
    HALFSTREET FLOOD WIDTH(FEET) =   12.26
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.08
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.26
  STREET FLOW TRAVEL TIME(MIN.) =   1.81   Tc(MIN.) =  16.13
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.112
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       10.34      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.04      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   12.38      SUBAREA RUNOFF(CFS) =   17.83
  EFFECTIVE AREA(ACRES) =     19.23    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     19.23        PEAK FLOW RATE(CFS) =      27.64

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.41   HALFSTREET FLOOD WIDTH(FEET) =  14.05
  FLOW VELOCITY(FEET/SEC.) =  6.60   DEPTH*VELOCITY(FT*FT/SEC.) =   2.69
  LONGEST FLOWPATH FROM NODE  21150.00 TO NODE  21152.00 =  1572.14 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021152.0 TO NODE LR021153.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
================================================================================
 UPSTREAM ELEVATION(FEET) = 1630.00  DOWNSTREAM ELEVATION(FEET) = 1590.00
 STREET LENGTH(FEET) =   730.95   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.66

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      35.27
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.46
   HALFSTREET FLOOD WIDTH(FEET) =   16.87
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.95
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.76
 STREET FLOW TRAVEL TIME(MIN.) =   2.05   Tc(MIN.) =  18.17
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.966
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        6.40      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.41      0.75      0.60    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        4.11      0.61      1.00    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.79
 SUBAREA AREA(ACRES) =   11.92      SUBAREA RUNOFF(CFS) =   15.23
 EFFECTIVE AREA(ACRES) =     31.15    AREA-AVERAGED Fm(INCH/HR) =  0.53
 AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.73
 TOTAL AREA(ACRES) =     31.15        PEAK FLOW RATE(CFS) =      40.35

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.48   HALFSTREET FLOOD WIDTH(FEET) =  17.80
 FLOW VELOCITY(FEET/SEC.) =  6.13   DEPTH*VELOCITY(FT*FT/SEC.) =   2.96
 LONGEST FLOWPATH FROM NODE  21150.00 TO NODE  21153.00 =  2303.09 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021153.0 TO NODE LR021126.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
================================================================================
 UPSTREAM ELEVATION(FEET) = 1590.00  DOWNSTREAM ELEVATION(FEET) = 1570.00
 STREET LENGTH(FEET) =   807.57   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00
```



```
 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      45.33
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.55
   HALFSTREET FLOOD WIDTH(FEET) =   20.46
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.98
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.74
 STREET FLOW TRAVEL TIME(MIN.) =   2.70   Tc(MIN.) =  20.88
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.809
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        7.02      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.50      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
 SUBAREA AREA(ACRES) =    8.52      SUBAREA RUNOFF(CFS) =    9.96
 EFFECTIVE AREA(ACRES) =     39.67    AREA-AVERAGED Fm(INCH/HR) =  0.52
 AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.72
 TOTAL AREA(ACRES) =     39.67        PEAK FLOW RATE(CFS) =      45.90

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.55   HALFSTREET FLOOD WIDTH(FEET) =  20.52
 FLOW VELOCITY(FEET/SEC.) =  5.02   DEPTH*VELOCITY(FT*FT/SEC.) =   2.76
 LONGEST FLOWPATH FROM NODE  21150.00 TO NODE  21126.00 =  3110.66 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021126.0 TO NODE LR021126.0 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
================================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  20.88
 RAINFALL INTENSITY(INCH/HR) =   1.81
 AREA-AVERAGED Fm(INCH/HR) =  0.52
 AREA-AVERAGED Fp(INCH/HR) =  0.73
 AREA-AVERAGED Ap =  0.72
 EFFECTIVE STREAM AREA(ACRES) =    39.67
 TOTAL STREAM AREA(ACRES) =    39.67
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     45.90
```

```
 ** CONFLUENCE DATA **
  STREAM      Q      Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER    (CFS)  (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
     1      67.49  22.95    1.709  0.75( 0.51) 0.69    62.7 LR021121.0
     2      45.90  20.88    1.809  0.73( 0.52) 0.72    39.7 LR021150.0

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM      Q      Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER    (CFS)  (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
     1     112.43  20.88    1.809  0.74( 0.52) 0.70    96.8 LR021150.0
     2     109.84  22.95    1.709  0.74( 0.52) 0.70   102.4 LR021121.0

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    112.43    Tc(MIN.) =    20.88
 EFFECTIVE AREA(ACRES) =    96.75   AREA-AVERAGED Fm(INCH/HR) =  0.52
 AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.70
 TOTAL AREA(ACRES) =    102.41
 LONGEST FLOWPATH FROM NODE  21121.00 TO NODE  21126.00 =  5128.21 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021126.0 TO NODE LR021127.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1570.00  DOWNSTREAM ELEVATION(FEET) = 1557.00
 STREET LENGTH(FEET) =   322.81   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     114.08
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.67
   HALFSTREET FLOOD WIDTH(FEET) =   26.32
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.82
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.21
 STREET FLOW TRAVEL TIME(MIN.) =   0.69   Tc(MIN.) =  21.56
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.774
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        2.16      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.72      0.75      0.60    56
```



```
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
 SUBAREA AREA(ACRES) =    2.88      SUBAREA RUNOFF(CFS) =    3.29
 EFFECTIVE AREA(ACRES) =     99.63    AREA-AVERAGED Fm(INCH/HR) =  0.52
 AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.70
 TOTAL AREA(ACRES) =    105.29        PEAK FLOW RATE(CFS) =     112.69

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.66   HALFSTREET FLOOD WIDTH(FEET) =  26.19
 FLOW VELOCITY(FEET/SEC.) =  7.80   DEPTH*VELOCITY(FT*FT/SEC.) =   5.18
 LONGEST FLOWPATH FROM NODE  21121.00 TO NODE  21127.00 =  5451.02 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021127.0 TO NODE LR021128.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1557.00  DOWNSTREAM(FEET) =   1535.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   354.44   CHANNEL SLOPE =  0.0621
 CHANNEL BASE(FEET) =    6.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   3.00
 CHANNEL FLOW THRU SUBAREA(CFS) =    112.69
 FLOW VELOCITY(FEET/SEC.) =  10.16   FLOW DEPTH(FEET) =   1.29
 TRAVEL TIME(MIN.) =   0.58   Tc(MIN.) =  22.15
 LONGEST FLOWPATH FROM NODE  21121.00 TO NODE  21128.00 =  5805.46 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021128.0 TO NODE LR021128.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  22.15
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.746
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       10.17      0.75      0.60    56
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B       45.95      0.75      0.70    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
 SUBAREA AREA(ACRES) =   56.12      SUBAREA RUNOFF(CFS) =   62.41
 EFFECTIVE AREA(ACRES) =    155.75   AREA-AVERAGED Fm(INCH/HR) =  0.51
 AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.69
 TOTAL AREA(ACRES) =    161.41       PEAK FLOW RATE(CFS) =     172.58

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

****************************************************************************
 FLOW PROCESS FROM NODE LR021128.0 TO NODE LR021129.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```

```
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1535.00  DOWNSTREAM(FEET) =   1495.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1036.57   CHANNEL SLOPE =  0.0386
  CHANNEL BASE(FEET) =    6.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    172.58
  FLOW VELOCITY(FEET/SEC.) =   9.68   FLOW DEPTH(FEET) =   1.84
  TRAVEL TIME(MIN.) =   1.79   Tc(MIN.) =  23.93
  LONGEST FLOWPATH FROM NODE  21121.00 TO NODE  21129.00 =  6842.03 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021129.0 TO NODE LR021129.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  23.93
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.666
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       17.92      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   17.92      SUBAREA RUNOFF(CFS) =   19.64
  EFFECTIVE AREA(ACRES) =    173.67   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    179.33       PEAK FLOW RATE(CFS) =     181.10

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

****************************************************************************
  FLOW PROCESS FROM NODE LR021129.0 TO NODE LR021129.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    181.10  23.93    1.666  0.74( 0.51) 0.68   173.7 LR021150.0
      2    173.71  26.03    1.584  0.74( 0.51) 0.68   179.3 LR021121.0
  LONGEST FLOWPATH FROM NODE  21121.00 TO NODE  21129.00 =  6842.03 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    156.60  25.58    1.601  0.75( 0.50) 0.67   158.6 LR021100.0
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21129.00 =  8028.36 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    336.33  23.93    1.666  0.75( 0.51) 0.68   322.0 LR021150.0
      2    331.91  25.58    1.601  0.75( 0.51) 0.68   336.7 LR021100.0
      3    327.90  26.03    1.584  0.75( 0.51) 0.68   337.9 LR021121.0
```



```
    TOTAL AREA(ACRES) =    337.89

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      336.33  Tc(MIN.) =   23.931
  EFFECTIVE AREA(ACRES) =    322.02  AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    337.89
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21129.00 =  8028.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021129.0 TO NODE LR021129.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021129.0 TO NODE LR021130.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1495.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1460.00
  FLOW LENGTH(FEET) =  1595.06   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  72.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  72.0 INCH PIPE IS  37.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  22.57
  PIPE-FLOW(CFS) =    336.33
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.18    Tc(MIN.) =  25.11
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21130.00 =  9623.42 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021130.0 TO NODE LR021130.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  25.11
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.619
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       64.12      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   64.12      SUBAREA RUNOFF(CFS) =   67.54
  EFFECTIVE AREA(ACRES) =    386.14   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.67
  TOTAL AREA(ACRES) =    402.01       PEAK FLOW RATE(CFS) =     390.14

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

****************************************************************************
  FLOW PROCESS FROM NODE LR021130.0 TO NODE LR021146.0 IS CODE =  54
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1460.00  DOWNSTREAM(FEET) =   1403.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1317.93   CHANNEL SLOPE =  0.0432
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   4.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    390.14
  FLOW VELOCITY(FEET/SEC.) =  12.38   FLOW DEPTH(FEET) =   2.44
  TRAVEL TIME(MIN.) =   1.77   Tc(MIN.) =  26.88
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21146.00 = 10941.35 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021146.0 TO NODE LR021146.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  26.88
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.554
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       22.28      0.75      0.60    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        1.50      0.63      1.00    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
  SUBAREA AREA(ACRES) =   23.78      SUBAREA RUNOFF(CFS) =   23.41
  EFFECTIVE AREA(ACRES) =    409.92   AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.66
  TOTAL AREA(ACRES) =    425.79       PEAK FLOW RATE(CFS) =     390.97

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

****************************************************************************
  FLOW PROCESS FROM NODE LR021146.0 TO NODE LR021146.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  26.88
  RAINFALL INTENSITY(INCH/HR) =   1.55
  AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.66
  EFFECTIVE STREAM AREA(ACRES) =   409.92
  TOTAL STREAM AREA(ACRES) =   425.79
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    390.97

****************************************************************************
  FLOW PROCESS FROM NODE LR021140.0 TO NODE LR021141.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
```



```
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   286.67
  ELEVATION DATA: UPSTREAM(FEET) =   1460.00  DOWNSTREAM(FEET) =   1450.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.750
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.278
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.17      0.75      0.60    56    7.75
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =      5.52
  TOTAL AREA(ACRES) =      2.17   PEAK FLOW RATE(CFS) =      5.52

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

****************************************************************************
  FLOW PROCESS FROM NODE LR021141.0 TO NODE LR021142.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1450.00  DOWNSTREAM ELEVATION(FEET) = 1445.00
  STREET LENGTH(FEET) =   752.60   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.59
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.43
    HALFSTREET FLOOD WIDTH(FEET) =   15.30
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.95
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.84
  STREET FLOW TRAVEL TIME(MIN.) =   6.44   Tc(MIN.) =  14.19
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.280
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.85      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    4.85      SUBAREA RUNOFF(CFS) =    7.99
  EFFECTIVE AREA(ACRES) =      7.02    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =      7.02        PEAK FLOW RATE(CFS) =      11.57
```

```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.46   HALFSTREET FLOOD WIDTH(FEET) =  16.48
  FLOW VELOCITY(FEET/SEC.) =  2.04   DEPTH*VELOCITY(FT*FT/SEC.) =   0.93
  LONGEST FLOWPATH FROM NODE  21140.00 TO NODE  21142.00 =  1039.27 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021142.0 TO NODE LR021143.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1445.00  DOWNSTREAM ELEVATION(FEET) = 1430.00
  STREET LENGTH(FEET) =   604.30   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.85

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      18.00
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.43
    HALFSTREET FLOOD WIDTH(FEET) =   15.15
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.73
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.60
  STREET FLOW TRAVEL TIME(MIN.) =   2.70   Tc(MIN.) =  16.89
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.054
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        8.88      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    8.88      SUBAREA RUNOFF(CFS) =   12.83
  EFFECTIVE AREA(ACRES) =     15.90    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     15.90        PEAK FLOW RATE(CFS) =      22.97

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.46   HALFSTREET FLOOD WIDTH(FEET) =  16.63
  FLOW VELOCITY(FEET/SEC.) =  3.98   DEPTH*VELOCITY(FT*FT/SEC.) =   1.83
  LONGEST FLOWPATH FROM NODE  21140.00 TO NODE  21143.00 =  1643.57 FEET.

****************************************************************************
```



```
  FLOW PROCESS FROM NODE LR021143.0 TO NODE LR021144.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1430.00  DOWNSTREAM ELEVATION(FEET) = 1413.00
  STREET LENGTH(FEET) =   592.37   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.82

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      26.98
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.47
    HALFSTREET FLOOD WIDTH(FEET) =   17.26
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.36
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.05
  STREET FLOW TRAVEL TIME(MIN.) =   2.27   Tc(MIN.) =  19.15
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.905
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        6.11      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    6.11      SUBAREA RUNOFF(CFS) =    8.01
  EFFECTIVE AREA(ACRES) =     22.01    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     22.01        PEAK FLOW RATE(CFS) =      28.84

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.48   HALFSTREET FLOOD WIDTH(FEET) =  17.73
  FLOW VELOCITY(FEET/SEC.) =  4.42   DEPTH*VELOCITY(FT*FT/SEC.) =   2.13
  LONGEST FLOWPATH FROM NODE  21140.00 TO NODE  21144.00 =  2235.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021144.0 TO NODE LR021145.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1413.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1409.00
  FLOW LENGTH(FEET) =    90.21   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
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```
 DEPTH OF FLOW IN  42.0 INCH PIPE IS  10.5 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  15.40
 PIPE-FLOW(CFS) =     28.84
 *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
 PIPEFLOW TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =  19.26
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.898
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       13.65      0.75      0.60    56
 COMMERCIAL                 B        1.61      0.75      0.10    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.55
 SUBAREA AREA(ACRES) =   15.26      SUBAREA RUNOFF(CFS) =   20.45
 EFFECTIVE AREA(ACRES) =     37.27    AREA-AVERAGED Fm(INCH/HR) =  0.43
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.58
 TOTAL AREA(ACRES) =     37.27        PEAK FLOW RATE(CFS) =     49.17

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

 STREET CROSS-SECTION INFORMATION:
 CURB HEIGHT(INCHES) =  6.0       STREET HALFWIDTH(FEET) = 18.00
 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   20.33
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.41
   HALFSTREET FLOOD WIDTH(FEET) =   14.13
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.80
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.96
 LONGEST FLOWPATH FROM NODE  21140.00 TO NODE  21145.00 =  2326.15 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021145.0 TO NODE LR021146.0 IS CODE =  33
----------------------------------------------------------------------------
 >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
 >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1409.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1403.00
 FLOW LENGTH(FEET) =   538.70   MANNING'S N =  0.013

 USER SPECIFIED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
 DEPTH OF FLOW IN  45.0 INCH PIPE IS  19.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  10.80
 PIPE-FLOW(CFS) =     49.17
 *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
 PIPEFLOW TRAVEL TIME(MIN.) =   0.88    Tc(MIN.) =  20.14
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.848
```



```
 SUBAREA AREA(ACRES) =    0.00      SUBAREA RUNOFF(CFS) =    0.00
 EFFECTIVE AREA(ACRES) =     37.27    AREA-AVERAGED Fm(INCH/HR) =  0.43
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.58
 TOTAL AREA(ACRES) =     37.27        PEAK FLOW RATE(CFS) =     49.17
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

 STREET CROSS-SECTION INFORMATION:
 CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 32.00
 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

 *NOTE: ESTIMATED PEAK FLOW DEFAULTED TO UPSTREAM PEAK FLOW;
        STREET HYDRAULICS NOT COMPUTED*
 LONGEST FLOWPATH FROM NODE  21140.00 TO NODE  21146.00 =  2864.85 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021146.0 TO NODE LR021146.0 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  20.14
 RAINFALL INTENSITY(INCH/HR) =   1.85
 AREA-AVERAGED Fm(INCH/HR) =  0.43
 AREA-AVERAGED Fp(INCH/HR) =  0.75
 AREA-AVERAGED Ap =  0.58
 EFFECTIVE STREAM AREA(ACRES) =    37.27
 TOTAL STREAM AREA(ACRES) =    37.27
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     49.17

 ** CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    390.03  26.96    1.552  0.75( 0.49) 0.66   409.9 LR021150.0
     1    382.90  28.62    1.497  0.75( 0.49) 0.66   424.6 LR021100.0
     1    378.45  29.08    1.482  0.75( 0.49) 0.66   425.8 LR021121.0
     2     49.17  20.14    1.848  0.75( 0.43) 0.58    37.3 LR021140.0

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    422.32  20.14    1.848  0.75( 0.49) 0.65   343.5 LR021140.0
     2    428.90  26.96    1.552  0.75( 0.49) 0.66   447.2 LR021150.0
     3    419.87  28.62    1.497  0.75( 0.49) 0.66   461.8 LR021100.0
```

```
     4    414.92  29.08    1.482  0.75( 0.49) 0.66   463.1 LR021121.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    428.90    Tc(MIN.) =    26.96
  EFFECTIVE AREA(ACRES) =   447.19   AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.66
  TOTAL AREA(ACRES) =    463.06
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21146.00 = 10941.35 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021146.0 TO NODE LR021165.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1403.00  DOWNSTREAM(FEET) =   1393.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   424.11   CHANNEL SLOPE =  0.0236
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   4.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    428.90
  FLOW VELOCITY(FEET/SEC.) =  10.21   FLOW DEPTH(FEET) =   3.00
  TRAVEL TIME(MIN.) =   0.69   Tc(MIN.) =  27.65
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21165.00 = 11365.46 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021165.0 TO NODE LR021165.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021154.0 TO NODE LR021154.2 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   709.46
  ELEVATION DATA: UPSTREAM(FEET) =   1720.00  DOWNSTREAM(FEET) =   1680.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.117
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.793
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        8.73      0.61      1.00    66   17.34
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.90      0.75      0.60    56   10.12
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        0.18      0.75      0.70    56   10.76
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.62
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.96
  SUBAREA RUNOFF(CFS) =     19.39
  TOTAL AREA(ACRES) =      9.81   PEAK FLOW RATE(CFS) =     19.39

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR021154.2 TO NODE LR021154.4 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1680.00  DOWNSTREAM(FEET) =   1620.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   614.72   CHANNEL SLOPE =  0.0976
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     19.39
  FLOW VELOCITY(FEET/SEC.) =   5.65   FLOW DEPTH(FEET) =   0.83
  TRAVEL TIME(MIN.) =   1.81   Tc(MIN.) =  11.93
  LONGEST FLOWPATH FROM NODE  21154.00 TO NODE  21154.40 =  1324.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021154.4 TO NODE LR021154.4 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  11.93
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.530
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       15.02      0.61      1.00    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        4.09      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.17      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.64
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.93
  SUBAREA AREA(ACRES) =   19.28      SUBAREA RUNOFF(CFS) =   33.61
  EFFECTIVE AREA(ACRES) =     29.09   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.63  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =     29.09       PEAK FLOW RATE(CFS) =      50.67

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

****************************************************************************
  FLOW PROCESS FROM NODE LR021154.4 TO NODE LR021155.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1620.00  DOWNSTREAM(FEET) =   1580.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   874.03   CHANNEL SLOPE =  0.0458
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     50.67
  FLOW VELOCITY(FEET/SEC.) =   5.41   FLOW DEPTH(FEET) =   1.37
  TRAVEL TIME(MIN.) =   2.69   Tc(MIN.) =  14.62
  LONGEST FLOWPATH FROM NODE  21154.00 TO NODE  21155.00 =  2198.21 FEET.

****************************************************************************
```

```
 FLOW PROCESS FROM NODE LR021155.0 TO NODE LR021155.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  14.62
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.239
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B       17.09      0.61      1.00    66
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        4.24      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.47      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.64
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.93
 SUBAREA AREA(ACRES) =   21.80      SUBAREA RUNOFF(CFS) =   32.31
 EFFECTIVE AREA(ACRES) =     50.89   AREA-AVERAGED Fm(INCH/HR) =  0.59
 AREA-AVERAGED Fp(INCH/HR) =  0.63  AREA-AVERAGED Ap =  0.94
 TOTAL AREA(ACRES) =     50.89       PEAK FLOW RATE(CFS) =      75.37

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

****************************************************************************
 FLOW PROCESS FROM NODE LR021155.0 TO NODE LR021156.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1580.00  DOWNSTREAM(FEET) =   1545.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1194.85   CHANNEL SLOPE =  0.0293
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   5.000
 MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
 CHANNEL FLOW THRU SUBAREA(CFS) =     75.37
 FLOW VELOCITY(FEET/SEC.) =   5.05   FLOW DEPTH(FEET) =   1.73
 TRAVEL TIME(MIN.) =   3.94   Tc(MIN.) =  18.56
 LONGEST FLOWPATH FROM NODE  21154.00 TO NODE  21156.00 =  3393.06 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021156.0 TO NODE LR021156.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  18.56
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.941
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        4.30      0.75      0.60    56
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B       39.32      0.75      0.70    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        7.87      0.61      1.00    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.72
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.74
```



```
 SUBAREA AREA(ACRES) =   51.49      SUBAREA RUNOFF(CFS) =   65.32
 EFFECTIVE AREA(ACRES) =    102.38   AREA-AVERAGED Fm(INCH/HR) =  0.56
 AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.84
 TOTAL AREA(ACRES) =    102.38       PEAK FLOW RATE(CFS) =     127.01

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

****************************************************************************
 FLOW PROCESS FROM NODE LR021156.0 TO NODE LR021157.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1545.00  DOWNSTREAM ELEVATION(FEET) = 1500.00
 STREET LENGTH(FEET) =   796.50   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.68

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     136.57
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.67
  HALFSTREET FLOOD WIDTH(FEET) =   26.44
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.28
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.21
 STREET FLOW TRAVEL TIME(MIN.) =   1.43   Tc(MIN.) =  19.99
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.856
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       10.24      0.75      0.60    56
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        5.14      0.75      0.70    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
 SUBAREA AREA(ACRES) =   15.38      SUBAREA RUNOFF(CFS) =   19.14
 EFFECTIVE AREA(ACRES) =    117.76    AREA-AVERAGED Fm(INCH/HR) =  0.55
 AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.81
 TOTAL AREA(ACRES) =    117.76        PEAK FLOW RATE(CFS) =     138.35

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.67   HALFSTREET FLOOD WIDTH(FEET) =  26.56
 FLOW VELOCITY(FEET/SEC.) =  9.32   DEPTH*VELOCITY(FT*FT/SEC.) =   6.26
 LONGEST FLOWPATH FROM NODE  21154.00 TO NODE  21157.00 =  4189.56 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR021157.0 TO NODE LR021163.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1500.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1452.00
  FLOW LENGTH(FEET) =  1406.44   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  24.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  21.34
  PIPE-FLOW(CFS) =    138.35
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.17    Tc(MIN.) =  21.16
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.794
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       19.67      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   19.67      SUBAREA RUNOFF(CFS) =   23.81
  EFFECTIVE AREA(ACRES) =    137.43    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.69  AREA-AVERAGED Ap =  0.78
  TOTAL AREA(ACRES) =    137.43        PEAK FLOW RATE(CFS) =    155.58

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  6.0       STREET HALFWIDTH(FEET) = 18.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   17.22
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.41
    HALFSTREET FLOOD WIDTH(FEET) =   13.98
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.16
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.69
  LONGEST FLOWPATH FROM NODE  21154.00 TO NODE  21163.00 =  5596.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021163.0 TO NODE LR021163.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
```



```
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  21.16
  RAINFALL INTENSITY(INCH/HR) =   1.79
  AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.69
  AREA-AVERAGED Ap =  0.78
  EFFECTIVE STREAM AREA(ACRES) =   137.43
  TOTAL STREAM AREA(ACRES) =   137.43
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    155.58

****************************************************************************
  FLOW PROCESS FROM NODE LR021160.0 TO NODE LR021161.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   381.26
  ELEVATION DATA: UPSTREAM(FEET) =   1545.00  DOWNSTREAM(FEET) =   1522.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.785
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.269
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.01      0.75      0.60    56    7.79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     12.72
  TOTAL AREA(ACRES) =      5.01   PEAK FLOW RATE(CFS) =     12.72

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

****************************************************************************
  FLOW PROCESS FROM NODE LR021161.0 TO NODE LR021162.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1522.00  DOWNSTREAM(FEET) =   1500.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   409.32   CHANNEL SLOPE =  0.0537
  CHANNEL BASE(FEET) =    4.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     12.72
  FLOW VELOCITY(FEET/SEC.) =   5.27   FLOW DEPTH(FEET) =   0.49
  TRAVEL TIME(MIN.) =   1.29   Tc(MIN.) =   9.08
  LONGEST FLOWPATH FROM NODE  21160.00 TO NODE  21162.00 =   790.58 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021162.0 TO NODE LR021162.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =   9.08
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.981
  SUBAREA LOSS RATE DATA(AMC  II):
```

```
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        4.71      0.75       0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    4.71      SUBAREA RUNOFF(CFS) =   10.73
  EFFECTIVE AREA(ACRES) =      9.72   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =      9.72       PEAK FLOW RATE(CFS) =      22.15

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

****************************************************************************
  FLOW PROCESS FROM NODE LR021162.0 TO NODE LR021163.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1500.00  DOWNSTREAM(FEET) =   1452.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1513.07   CHANNEL SLOPE =  0.0317
  CHANNEL BASE(FEET) =    4.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     22.15
  FLOW VELOCITY(FEET/SEC.) =   5.21   FLOW DEPTH(FEET) =   0.77
  TRAVEL TIME(MIN.) =   4.84   Tc(MIN.) =  13.92
  LONGEST FLOWPATH FROM NODE  21160.00 TO NODE  21163.00 =  2303.65 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021163.0 TO NODE LR021163.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  13.92
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.307
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B       14.70      0.75       0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   14.70      SUBAREA RUNOFF(CFS) =   24.58
  EFFECTIVE AREA(ACRES) =     24.42   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     24.42       PEAK FLOW RATE(CFS) =      40.83

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

****************************************************************************
  FLOW PROCESS FROM NODE LR021163.0 TO NODE LR021163.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
```



```
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  13.92
  RAINFALL INTENSITY(INCH/HR) =   2.31
  AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.60
  EFFECTIVE STREAM AREA(ACRES) =    24.42
  TOTAL STREAM AREA(ACRES) =    24.42
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     40.83

  ** CONFLUENCE DATA **
   STREAM     Q      Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    155.58  21.16    1.794  0.69( 0.54) 0.78   137.4 LR021154.0
      2     40.83  13.92    2.307  0.75( 0.45) 0.60    24.4 LR021160.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q      Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    184.87  13.92    2.307  0.70( 0.52) 0.74   114.8 LR021160.0
      2    185.14  21.16    1.794  0.69( 0.52) 0.75   161.8 LR021154.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    185.14    Tc(MIN.) =    21.16
  EFFECTIVE AREA(ACRES) =   161.85   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.69  AREA-AVERAGED Ap =  0.75
  TOTAL AREA(ACRES) =    161.85
  LONGEST FLOWPATH FROM NODE  21154.00 TO NODE  21163.00 =  5596.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021163.0 TO NODE LR021164.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1452.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1436.00
  FLOW LENGTH(FEET) =   667.61   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  30.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.07
  PIPE-FLOW(CFS) =    185.14
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.55    Tc(MIN.) =  21.72
  LONGEST FLOWPATH FROM NODE  21154.00 TO NODE  21164.00 =  6263.61 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021164.0 TO NODE LR021164.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.72
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.766
  SUBAREA LOSS RATE DATA(AMC  II):
```

```
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       13.33      0.75       0.60    56
 AGRICULTURAL FAIR COVER
 "ORCHARDS"                 B        1.74      0.63       1.00    65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.73
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.65
 SUBAREA AREA(ACRES) =   15.07      SUBAREA RUNOFF(CFS) =   17.59
 EFFECTIVE AREA(ACRES) =    176.92   AREA-AVERAGED Fm(INCH/HR) =  0.52
 AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.74
 TOTAL AREA(ACRES) =    176.92       PEAK FLOW RATE(CFS) =     198.71

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    203.15  14.51    2.250  0.70( 0.51) 0.73   129.9 LR021160.0
     2    198.43  21.75    1.765  0.70( 0.52) 0.74   176.9 LR021154.0
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    203.15  Tc(MIN.) =  14.51
 AREA-AVERAGED Fm(INCH/HR) =  0.51  AREA-AVERAGED Fp(INCH/HR) =  0.70
 AREA-AVERAGED Ap =  0.73  EFFECTIVE AREA(ACRES) =    129.88

****************************************************************************
 FLOW PROCESS FROM NODE LR021164.0 TO NODE LR021165.0 IS CODE =  42
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1436.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1393.00
 FLOW LENGTH(FEET) =  1236.24   MANNING'S N =  0.013

 USER SPECIFIED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
 DEPTH OF FLOW IN  54.0 INCH PIPE IS  28.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  23.65
 PIPE-FLOW(CFS) =    203.15
 *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
 PIPEFLOW TRAVEL TIME(MIN.) =   0.87    Tc(MIN.) =  15.38
 LONGEST FLOWPATH FROM NODE  21154.00 TO NODE  21165.00 =  7499.85 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021165.0 TO NODE LR021165.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  15.38
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.173
 SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 SCHOOL                     B        1.72      0.75       0.60    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       10.42      0.75       0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
```



```
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =   12.14      SUBAREA RUNOFF(CFS) =   18.83
 EFFECTIVE AREA(ACRES) =    142.02   AREA-AVERAGED Fm(INCH/HR) =  0.51
 AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.72
 TOTAL AREA(ACRES) =    189.06       PEAK FLOW RATE(CFS) =     212.94

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

****************************************************************************
 FLOW PROCESS FROM NODE LR021165.0 TO NODE LR021165.0 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    212.34  15.44    2.168  0.70( 0.51) 0.72   142.0 LR021160.0
     2    205.34  22.68    1.721  0.70( 0.51) 0.73   189.1 LR021154.0
 LONGEST FLOWPATH FROM NODE  21154.00 TO NODE  21165.00 =  7499.85 FEET.

 ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    422.32  20.84    1.811  0.75( 0.49) 0.65   343.5 LR021140.0
     2    428.90  27.65    1.528  0.75( 0.49) 0.66   447.2 LR021150.0
     3    419.87  29.31    1.475  0.75( 0.49) 0.66   461.8 LR021100.0
     4    414.92  29.78    1.461  0.75( 0.49) 0.66   463.1 LR021121.0
 LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21165.00 = 11365.46 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    609.65  15.44    2.168  0.73( 0.49) 0.68   396.5 LR021160.0
     2    629.45  20.84    1.811  0.73( 0.50) 0.68   520.6 LR021140.0
     3    629.45  22.68    1.721  0.73( 0.50) 0.68   560.7 LR021154.0
     4    601.46  27.65    1.528  0.73( 0.50) 0.68   636.2 LR021150.0
     5    583.47  29.31    1.475  0.73( 0.50) 0.68   650.9 LR021100.0
     6    576.14  29.78    1.461  0.73( 0.50) 0.68   652.1 LR021121.0
   TOTAL AREA(ACRES) =    652.12

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      629.45  Tc(MIN.) =   22.684
 EFFECTIVE AREA(ACRES) =    560.73  AREA-AVERAGED Fm(INCH/HR) =  0.50
 AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.68
 TOTAL AREA(ACRES) =    652.12
 LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21165.00 = 11365.46 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021165.0 TO NODE LR021165.0 IS CODE =  71
----------------------------------------------------------------------------
 >>>>>PEAK FLOW RATE ESTIMATOR CHANGED TO UNIT-HYDROGRAPH METHOD<<<<<
 >>>>>USING TIME-OF-CONCENTRATION OF LONGEST FLOWPATH<<<<<
============================================================================
 UNIT-HYDROGRAPH DATA:
 RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.56;6H= 2.12;24H= 4.26
 S-GRAPH: VALLEY(DEV.)= 91.4%;VALLEY(UNDEV.)/DESERT=  8.6%
```

```
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.49; LAG(HR) = 0.39; Fm(INCH/HR) = 0.50; Ybar = 0.58
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 1.00; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    652.12
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21165.00 = 11365.46 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0401; Lca/L=0.4,n=.0359; Lca/L=0.5,n=.0330;Lca/L=0.6,n=.0308
  TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     107.90
  UNIT-HYDROGRAPH METHOD PEAK FLOW RATE(CFS) =    628.20
  TOTAL PEAK FLOW RATE(CFS) =    628.20 (SOURCE FLOW INCLUDED)
  RATIONAL METHOD PEAK FLOW RATE(CFS) =    629.45
   (UPSTREAM NODE PEAK FLOW RATE(CFS) =    629.45)
  PEAK FLOW RATE(CFS) USED =    629.45

****************************************************************************
  FLOW PROCESS FROM NODE LR021165.0 TO NODE LR021165.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021165.0 TO NODE LR021166.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1393.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1357.00
  FLOW LENGTH(FEET) =  1083.24   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  84.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  84.0 INCH PIPE IS  44.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  30.85
  PIPE-FLOW(CFS) =    629.45
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.59    Tc(MIN.) =  29.90
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21166.00 = 12448.70 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021166.0 TO NODE LR021166.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  29.90
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.458
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       28.30      0.75      0.60    56
  SCHOOL                     B       18.42      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   46.72
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.56;6H= 2.12;24H= 4.26
```



```
  S-GRAPH: VALLEY(DEV.)= 92.0%;VALLEY(UNDEV.)/DESERT=  8.0%
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.50; LAG(HR) = 0.40; Fm(INCH/HR) = 0.49; Ybar = 0.57
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 1.00; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    698.84
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21166.00 = 12448.70 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0380; Lca/L=0.4,n=.0341; Lca/L=0.5,n=.0313;Lca/L=0.6,n=.0292
  TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     116.37
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    660.53
  TOTAL AREA(ACRES) =    698.84       PEAK FLOW RATE(CFS) =     660.53

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

****************************************************************************
  FLOW PROCESS FROM NODE LR021166.0 TO NODE LR021167.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1357.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1320.00
  FLOW LENGTH(FEET) =  1316.79   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  84.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  84.0 INCH PIPE IS  47.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  29.27
  PIPE-FLOW(CFS) =    660.53
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.75    Tc(MIN.) =  30.65
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21167.00 = 13765.49 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021167.0 TO NODE LR021167.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  30.65
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.437
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       42.55      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   42.55
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.56;6H= 2.12;24H= 4.26
  S-GRAPH: VALLEY(DEV.)= 92.4%;VALLEY(UNDEV.)/DESERT=  7.6%
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.51; LAG(HR) = 0.41; Fm(INCH/HR) = 0.49; Ybar = 0.57
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 1.00; 6HR = 1.00; 24HR= 1.00
```

```
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    741.39
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21167.00 = 13765.49 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0359; Lca/L=0.4,n=.0322; Lca/L=0.5,n=.0296;Lca/L=0.6,n=.0276
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     124.07
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    692.83
  TOTAL AREA(ACRES) =    741.39       PEAK FLOW RATE(CFS) =     692.83

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

****************************************************************************
  FLOW PROCESS FROM NODE LR021167.0 TO NODE LR021167.0 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 21167.dna
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =    741.39  TC(MIN.) =     30.65
  AREA-AVERAGED Fm(INCH/HR)=  0.49   Ybar =  0.57
  PEAK FLOW RATE(CFS)   =    692.83
============================================================================
============================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
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            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
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                        Analysis prepared by:

                        San Bernardino County
                  Transportation/ Flood Control Department

                        Water Resources Division

 ************************ DESCRIPTION OF STUDY *************************
* LR 0212ZZ FILE                                                       *
*  25-YEAR STORM                                                       *
*                                                                      *
 **********************************************************************

  FILE NAME: LR0212ZZ.Z25
  TIME/DATE OF STUDY: 11:26 02/23/2006
==============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 0.9600

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
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 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


******************************************************************************
  FLOW PROCESS FROM NODE LR021200.0 TO NODE LR021201.0 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   569.96
  ELEVATION DATA: UPSTREAM(FEET) =   1740.00  DOWNSTREAM(FEET) =   1707.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.219
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.954
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  SCHOOL                     B        0.54      0.75       0.60    56    9.22
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.10      0.75       0.60    56    9.22
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.38      0.75       0.70    56    9.80
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA RUNOFF(CFS) =     13.28
  TOTAL AREA(ACRES) =      6.02   PEAK FLOW RATE(CFS) =     13.28

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

******************************************************************************
  FLOW PROCESS FROM NODE LR021201.0 TO NODE LR021202.0 IS CODE =  63
------------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
==============================================================================
  UPSTREAM ELEVATION(FEET) = 1707.00  DOWNSTREAM ELEVATION(FEET) = 1695.00
  STREET LENGTH(FEET) =   243.63   CURB HEIGHT(INCHES) =  8.0
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  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.74

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      16.27
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.40
    HALFSTREET FLOOD WIDTH(FEET) =   12.32
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.77
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.93
  STREET FLOW TRAVEL TIME(MIN.) =   0.85   Tc(MIN.) =  10.07
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.801
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.00      0.75      0.60    56
  SCHOOL                     B        1.16      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        0.69      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.62
  SUBAREA AREA(ACRES) =    2.85      SUBAREA RUNOFF(CFS) =    5.99
  EFFECTIVE AREA(ACRES) =      8.87    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.66
  TOTAL AREA(ACRES) =      8.87        PEAK FLOW RATE(CFS) =      18.44

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.42   HALFSTREET FLOOD WIDTH(FEET) =  12.96
  FLOW VELOCITY(FEET/SEC.) =  4.93   DEPTH*VELOCITY(FT*FT/SEC.) =   2.06
  LONGEST FLOWPATH FROM NODE  21200.00 TO NODE  21202.00 =   813.59 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021202.0 TO NODE LR021203.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1695.00  DOWNSTREAM ELEVATION(FEET) = 1675.00
  STREET LENGTH(FEET) =   482.35   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
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  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.77

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      27.50
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.48
    HALFSTREET FLOOD WIDTH(FEET) =   15.89
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.06
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.41
  STREET FLOW TRAVEL TIME(MIN.) =   1.59   Tc(MIN.) =  11.66
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.565
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        8.92      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.90      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    9.82      SUBAREA RUNOFF(CFS) =   18.11
  EFFECTIVE AREA(ACRES) =     18.69    AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.67
  TOTAL AREA(ACRES) =     18.69        PEAK FLOW RATE(CFS) =      34.66

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.51   HALFSTREET FLOOD WIDTH(FEET) =  17.47
  FLOW VELOCITY(FEET/SEC.) =  5.34   DEPTH*VELOCITY(FT*FT/SEC.) =   2.71
  LONGEST FLOWPATH FROM NODE  21200.00 TO NODE  21203.00 =  1295.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021203.0 TO NODE LR021204.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1675.00  DOWNSTREAM ELEVATION(FEET) = 1638.00
  STREET LENGTH(FEET) =   756.35   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.74

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      42.49
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.53
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  HALFSTREET FLOOD WIDTH(FEET) =   18.35
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.97
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.14
 STREET FLOW TRAVEL TIME(MIN.) =   2.11   Tc(MIN.) =  13.77
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.322
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        7.90      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.70      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
 SUBAREA AREA(ACRES) =    9.60      SUBAREA RUNOFF(CFS) =   15.65
 EFFECTIVE AREA(ACRES) =     28.29    AREA-AVERAGED Fm(INCH/HR) =  0.51
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
 TOTAL AREA(ACRES) =     28.29        PEAK FLOW RATE(CFS) =      46.21

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.54   HALFSTREET FLOOD WIDTH(FEET) =  18.94
 FLOW VELOCITY(FEET/SEC.) =  6.12   DEPTH*VELOCITY(FT*FT/SEC.) =   3.29
 LONGEST FLOWPATH FROM NODE  21200.00 TO NODE  21204.00 =  2052.29 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021204.0 TO NODE LR021205.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1638.00  DOWNSTREAM ELEVATION(FEET) = 1633.00
 STREET LENGTH(FEET) =   323.24   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.99

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      52.12
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.66
   HALFSTREET FLOOD WIDTH(FEET) =   24.92
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.07
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.67
 STREET FLOW TRAVEL TIME(MIN.) =   1.32   Tc(MIN.) =  15.09
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.197
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
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 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        6.52      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.27      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
 SUBAREA AREA(ACRES) =    7.79      SUBAREA RUNOFF(CFS) =   11.82
 EFFECTIVE AREA(ACRES) =     36.08    AREA-AVERAGED Fm(INCH/HR) =  0.51
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
 TOTAL AREA(ACRES) =     36.08        PEAK FLOW RATE(CFS) =      54.87

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.67   HALFSTREET FLOOD WIDTH(FEET) =  25.47
 FLOW VELOCITY(FEET/SEC.) =  4.12   DEPTH*VELOCITY(FT*FT/SEC.) =   2.75
 LONGEST FLOWPATH FROM NODE  21200.00 TO NODE  21205.00 =  2375.53 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021205.0 TO NODE LR021206.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1633.00  DOWNSTREAM ELEVATION(FEET) = 1629.00
 STREET LENGTH(FEET) =   199.37   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.92

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      58.81
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.66
   HALFSTREET FLOOD WIDTH(FEET) =   24.86
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.62
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.03
 STREET FLOW TRAVEL TIME(MIN.) =   0.72   Tc(MIN.) =  15.81
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.137
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.19      0.75      0.60    56
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        4.19      0.75      0.70    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
 SUBAREA AREA(ACRES) =    5.38      SUBAREA RUNOFF(CFS) =    7.89
 EFFECTIVE AREA(ACRES) =     41.46    AREA-AVERAGED Fm(INCH/HR) =  0.51
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  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     41.46        PEAK FLOW RATE(CFS) =      60.79

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.66   HALFSTREET FLOOD WIDTH(FEET) =  25.15
  FLOW VELOCITY(FEET/SEC.) =  4.67   DEPTH*VELOCITY(FT*FT/SEC.) =   3.09
  LONGEST FLOWPATH FROM NODE  21200.00 TO NODE  21206.00 =  2574.90 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021206.0 TO NODE LR021207.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1629.00  DOWNSTREAM ELEVATION(FEET) = 1610.00
  STREET LENGTH(FEET) =   607.72   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.83

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      65.18
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.63
    HALFSTREET FLOOD WIDTH(FEET) =   23.69
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.62
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.55
  STREET FLOW TRAVEL TIME(MIN.) =   1.80   Tc(MIN.) =  17.61
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.003
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.03      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.49      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    6.52      SUBAREA RUNOFF(CFS) =    8.78
  EFFECTIVE AREA(ACRES) =     47.98    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     47.98        PEAK FLOW RATE(CFS) =      64.57

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.63   HALFSTREET FLOOD WIDTH(FEET) =  23.63
```



```
  FLOW VELOCITY(FEET/SEC.) =  5.59   DEPTH*VELOCITY(FT*FT/SEC.) =   3.53
  LONGEST FLOWPATH FROM NODE  21200.00 TO NODE  21207.00 =  3182.62 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021207.0 TO NODE LR021208.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1610.00  DOWNSTREAM ELEVATION(FEET) = 1590.00
  STREET LENGTH(FEET) =   532.97   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.79

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      69.61
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.63
    HALFSTREET FLOOD WIDTH(FEET) =   23.45
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.12
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.84
  STREET FLOW TRAVEL TIME(MIN.) =   1.45   Tc(MIN.) =  19.07
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.910
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.92      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.09      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    8.01      SUBAREA RUNOFF(CFS) =   10.07
  EFFECTIVE AREA(ACRES) =     55.99    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     55.99        PEAK FLOW RATE(CFS) =      70.63

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.63   HALFSTREET FLOOD WIDTH(FEET) =  23.63
  FLOW VELOCITY(FEET/SEC.) =  6.12   DEPTH*VELOCITY(FT*FT/SEC.) =   3.86
  LONGEST FLOWPATH FROM NODE  21200.00 TO NODE  21208.00 =  3715.59 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021208.0 TO NODE LR021209.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
```

```
==========================================================================
  UPSTREAM ELEVATION(FEET) = 1590.00  DOWNSTREAM ELEVATION(FEET) = 1550.00
  STREET LENGTH(FEET) =   677.51   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.72

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      72.98
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.60
    HALFSTREET FLOOD WIDTH(FEET) =   21.87
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.34
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.37
  STREET FLOW TRAVEL TIME(MIN.) =   1.54   Tc(MIN.) =  20.60
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.823
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.99      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.98      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    3.97      SUBAREA RUNOFF(CFS) =    4.71
  EFFECTIVE AREA(ACRES) =     59.96    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     59.96        PEAK FLOW RATE(CFS) =      70.96

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.59   HALFSTREET FLOOD WIDTH(FEET) =  21.63
  FLOW VELOCITY(FEET/SEC.) =  7.28   DEPTH*VELOCITY(FT*FT/SEC.) =   4.30
  LONGEST FLOWPATH FROM NODE  21200.00 TO NODE  21209.00 =  4393.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021209.0 TO NODE LR021215.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1550.00  DOWNSTREAM(FEET) =  1520.00
  FLOW LENGTH(FEET) =   978.51   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   4.00   GIVEN BOX HEIGHT(FEET) =   2.00
  FLOWDEPTH IN BOX IS  1.17 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  15.16
  BOX-FLOW(CFS) =     70.96
  BOX-FLOW TRAVEL TIME(MIN.) =   1.08    Tc(MIN.) =  21.68
  LONGEST FLOWPATH FROM NODE  21200.00 TO NODE  21215.00 =  5371.61 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR021215.0 TO NODE LR021215.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.68
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.768
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.58      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    5.58      SUBAREA RUNOFF(CFS) =    6.63
  EFFECTIVE AREA(ACRES) =     65.54   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.67
  TOTAL AREA(ACRES) =     65.54       PEAK FLOW RATE(CFS) =      74.62

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

****************************************************************************
  FLOW PROCESS FROM NODE LR021215.0 TO NODE LR021215.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021213.3 TO NODE LR021213.4 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   760.53
  ELEVATION DATA: UPSTREAM(FEET) =   1700.00  DOWNSTREAM(FEET) =   1690.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.918
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.307
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  SCHOOL                     B        8.73      0.75      0.60    56   13.92
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.08      0.75      0.60    56   13.92
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     16.40
  TOTAL AREA(ACRES) =      9.81   PEAK FLOW RATE(CFS) =     16.40

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

****************************************************************************
  FLOW PROCESS FROM NODE LR021213.4 TO NODE LR021213.5 IS CODE =  63
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) = 1690.00  DOWNSTREAM ELEVATION(FEET) = 1640.00
  STREET LENGTH(FEET) =  1952.61   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      28.17
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.49
    HALFSTREET FLOOD WIDTH(FEET) =   17.96
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.21
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.04
  STREET FLOW TRAVEL TIME(MIN.) =   7.73   Tc(MIN.) =  21.65
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.770
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  SCHOOL                     B        3.65      0.75      0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.28      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       12.18      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.66
  SUBAREA AREA(ACRES) =   20.11      SUBAREA RUNOFF(CFS) =   23.09
  EFFECTIVE AREA(ACRES) =     29.92    AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.64
  TOTAL AREA(ACRES) =     29.92        PEAK FLOW RATE(CFS) =      34.75

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.51   HALFSTREET FLOOD WIDTH(FEET) =  18.50
  FLOW VELOCITY(FEET/SEC.) =  4.59   DEPTH*VELOCITY(FT*FT/SEC.) =   2.34
  LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21213.50 =  2713.14 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021213.5 TO NODE LR021214.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) = 1640.00  DOWNSTREAM ELEVATION(FEET) = 1540.00
  STREET LENGTH(FEET) =  2138.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00
```



```
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.69

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      42.18
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.50
    HALFSTREET FLOOD WIDTH(FEET) =   18.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.95
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.95
  STREET FLOW TRAVEL TIME(MIN.) =   5.99   Tc(MIN.) =  27.64
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.529
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       14.39      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.85      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =   16.24      SUBAREA RUNOFF(CFS) =   14.81
  EFFECTIVE AREA(ACRES) =     46.16    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.66
  TOTAL AREA(ACRES) =     46.16        PEAK FLOW RATE(CFS) =      43.07

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.50   HALFSTREET FLOOD WIDTH(FEET) =  18.00
  FLOW VELOCITY(FEET/SEC.) =  6.00   DEPTH*VELOCITY(FT*FT/SEC.) =   2.99
  LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21214.00 =  4851.64 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021214.0 TO NODE LR021214.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021210.0 TO NODE LR021211.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   788.20
  ELEVATION DATA: UPSTREAM(FEET) =   1650.00  DOWNSTREAM(FEET) =   1625.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.838
```

```
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.542
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        4.70      0.75       0.70    56   12.59
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.64      0.75       0.60    56   11.84
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA RUNOFF(CFS) =      9.74
  TOTAL AREA(ACRES) =      5.34   PEAK FLOW RATE(CFS) =      9.74

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

****************************************************************************
  FLOW PROCESS FROM NODE LR021211.0 TO NODE LR021212.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1625.00  DOWNSTREAM(FEET) =   1610.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   337.81   CHANNEL SLOPE =  0.0444
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      9.74
  FLOW VELOCITY(FEET/SEC.) =   3.53   FLOW DEPTH(FEET) =   0.74
  TRAVEL TIME(MIN.) =   1.59   Tc(MIN.) =  13.43
  LONGEST FLOWPATH FROM NODE  21210.00 TO NODE  21212.00 =  1126.01 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021212.0 TO NODE LR021212.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  13.43
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.356
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        7.68      0.75       0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =     7.68      SUBAREA RUNOFF(CFS) =   12.67
  EFFECTIVE AREA(ACRES) =     13.02   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     13.02       PEAK FLOW RATE(CFS) =      21.52

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

****************************************************************************
  FLOW PROCESS FROM NODE LR021212.0 TO NODE LR021213.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
```



```
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1610.00  DOWNSTREAM(FEET) =   1592.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   463.88   CHANNEL SLOPE =  0.0388
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  10.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     21.52
  FLOW VELOCITY(FEET/SEC.) =   3.46   FLOW DEPTH(FEET) =   0.79
  TRAVEL TIME(MIN.) =   2.23   Tc(MIN.) =  15.67
  LONGEST FLOWPATH FROM NODE  21210.00 TO NODE  21213.00 =  1589.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021213.0 TO NODE LR021213.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  15.67
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.149
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        5.46      0.75       0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.60      0.75       0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =     6.06      SUBAREA RUNOFF(CFS) =     8.90
  EFFECTIVE AREA(ACRES) =     19.08   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     19.08       PEAK FLOW RATE(CFS) =      27.99

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

****************************************************************************
  FLOW PROCESS FROM NODE LR021213.0 TO NODE LR021213.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.67
  RAINFALL INTENSITY(INCH/HR) =   2.15
  AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.69
  EFFECTIVE STREAM AREA(ACRES) =    19.08
  TOTAL STREAM AREA(ACRES) =    19.08
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     27.99

****************************************************************************
  FLOW PROCESS FROM NODE LR021213.1 TO NODE LR021213.2 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   686.22
  ELEVATION DATA: UPSTREAM(FEET) =   1642.00  DOWNSTREAM(FEET) =   1610.00
```

```
  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.369
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.752
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  PUBLIC PARK                 B        1.60      0.75      0.85    56   12.16
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        1.75      0.75      0.70    56   11.02
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.25      0.75      0.60    56   10.37
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.76
  SUBAREA RUNOFF(CFS) =      7.08
  TOTAL AREA(ACRES) =      3.60   PEAK FLOW RATE(CFS) =      7.08

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

****************************************************************************
  FLOW PROCESS FROM NODE LR021213.2 TO NODE LR021213.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1610.00  DOWNSTREAM ELEVATION(FEET) = 1592.00
  STREET LENGTH(FEET) =   944.44   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.33
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.38
    HALFSTREET FLOOD WIDTH(FEET) =   12.73
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.97
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.13
  STREET FLOW TRAVEL TIME(MIN.) =   5.30   Tc(MIN.) =  15.67
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.149
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                 B        0.14      0.75      0.85    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        4.29      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =     4.43      SUBAREA RUNOFF(CFS) =     6.47
  EFFECTIVE AREA(ACRES) =      8.03    AREA-AVERAGED Fm(INCH/HR) =  0.55
```



```
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =      8.03        PEAK FLOW RATE(CFS) =      11.59

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.39   HALFSTREET FLOOD WIDTH(FEET) =  13.35
  FLOW VELOCITY(FEET/SEC.) =  3.05   DEPTH*VELOCITY(FT*FT/SEC.) =   1.20
  LONGEST FLOWPATH FROM NODE  21213.10 TO NODE  21213.00 =  1630.66 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021213.0 TO NODE LR021213.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.67
  RAINFALL INTENSITY(INCH/HR) =   2.15
  AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.73
  EFFECTIVE STREAM AREA(ACRES) =     8.03
  TOTAL STREAM AREA(ACRES) =     8.03
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.59

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     27.99  15.67    2.149  0.75( 0.52) 0.69    19.1 LR021210.0
      2     11.59  15.67    2.149  0.75( 0.55) 0.73     8.0 LR021213.1

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     39.57  15.67    2.149  0.75( 0.53) 0.70    27.1 LR021213.1
      2     39.57  15.67    2.149  0.75( 0.53) 0.70    27.1 LR021210.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     39.57    Tc(MIN.) =    15.67
  EFFECTIVE AREA(ACRES) =    27.11   AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     27.11
  LONGEST FLOWPATH FROM NODE  21213.10 TO NODE  21213.00 =  1630.66 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021213.0 TO NODE LR021214.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1592.00  DOWNSTREAM(FEET) =   1540.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   580.67   CHANNEL SLOPE =  0.0896
```

```
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  10.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     39.57
  FLOW VELOCITY(FEET/SEC.) =   5.56   FLOW DEPTH(FEET) =   0.84
  TRAVEL TIME(MIN.) =   1.74   Tc(MIN.) =  17.41
  LONGEST FLOWPATH FROM NODE  21213.10 TO NODE  21214.00 =  2211.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021214.0 TO NODE LR021214.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.41
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.017
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        4.04      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.60      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    4.64      SUBAREA RUNOFF(CFS) =    6.28
  EFFECTIVE AREA(ACRES) =     31.75   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     31.75       PEAK FLOW RATE(CFS) =      42.64

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

****************************************************************************
  FLOW PROCESS FROM NODE LR021214.0 TO NODE LR021214.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     42.64  17.41    2.017  0.75( 0.52) 0.70    31.7 LR021213.1
      2     42.64  17.41    2.017  0.75( 0.52) 0.70    31.8 LR021210.0
  LONGEST FLOWPATH FROM NODE  21213.10 TO NODE  21214.00 =  2211.33 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     43.07  27.64    1.529  0.75( 0.49) 0.66    46.2 LR021213.3
  LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21214.00 =  4851.64 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     82.55  17.41    2.017  0.75( 0.51) 0.68    60.8 LR021213.1
      2     82.55  17.41    2.017  0.75( 0.51) 0.68    60.8 LR021210.0
      3     71.75  27.64    1.529  0.75( 0.51) 0.68    77.9 LR021213.3
    TOTAL AREA(ACRES) =     77.91
```



```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       82.55  Tc(MIN.) =   17.410
  EFFECTIVE AREA(ACRES) =     60.83  AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     77.91
  LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21214.00 =  4851.64 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021214.0 TO NODE LR021214.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021214.0 TO NODE LR021215.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1540.00  DOWNSTREAM ELEVATION(FEET) = 1520.00
  STREET LENGTH(FEET) =   601.35   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      88.58
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.64
    HALFSTREET FLOOD WIDTH(FEET) =   24.79
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.80
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.32
  STREET FLOW TRAVEL TIME(MIN.) =   1.47   Tc(MIN.) =  18.88
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.921
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.90      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        8.64      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    9.54      SUBAREA RUNOFF(CFS) =   12.06
  EFFECTIVE AREA(ACRES) =     70.37    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     87.45        PEAK FLOW RATE(CFS) =      89.36

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26
```

```
  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.64   HALFSTREET FLOOD WIDTH(FEET) =  24.91
  FLOW VELOCITY(FEET/SEC.) =  6.80   DEPTH*VELOCITY(FT*FT/SEC.) =   4.34
  LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21215.00 =  5452.99 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021215.0 TO NODE LR021215.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1     89.36  18.88    1.921  0.75( 0.51) 0.68    70.4 LR021213.1
      2     89.36  18.88    1.921  0.75( 0.51) 0.68    70.4 LR021210.0
      3     76.59  29.18    1.480  0.75( 0.51) 0.68    87.5 LR021213.3
  LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21215.00 =  5452.99 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1     74.62  21.68    1.768  0.75( 0.50) 0.67    65.5 LR021200.0
  LONGEST FLOWPATH FROM NODE  21200.00 TO NODE  21215.00 =  5371.61 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    162.20  18.88    1.921  0.75( 0.51) 0.68   127.4 LR021213.1
      2    162.20  18.88    1.921  0.75( 0.51) 0.68   127.5 LR021210.0
      3    160.51  21.68    1.768  0.75( 0.51) 0.68   140.6 LR021200.0
      4    134.19  29.18    1.480  0.75( 0.51) 0.68   153.0 LR021213.3
    TOTAL AREA(ACRES) =    152.99

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      162.20  Tc(MIN.) =   18.883
  EFFECTIVE AREA(ACRES) =    127.45  AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    152.99
  LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21215.00 =  5452.99 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021215.0 TO NODE LR021215.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021215.0 TO NODE LR021216.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1520.00  DOWNSTREAM(FEET) =  1470.00
  FLOW LENGTH(FEET) =  1371.54   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   6.00   GIVEN BOX HEIGHT(FEET) =   3.00
  FLOWDEPTH IN BOX IS  1.38 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  19.54
```



```
  BOX-FLOW(CFS) =    162.20
  BOX-FLOW TRAVEL TIME(MIN.) =   1.17    Tc(MIN.) =  20.05
  LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21216.00 =  6824.53 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021216.0 TO NODE LR021216.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  20.05
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.853
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B       23.70      0.75       0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   23.70      SUBAREA RUNOFF(CFS) =   29.95
  EFFECTIVE AREA(ACRES) =    151.15   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.67
  TOTAL AREA(ACRES) =    176.69       PEAK FLOW RATE(CFS) =     184.34

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    185.27  19.93    1.860  0.75( 0.50) 0.67   151.2 LR021210.0
      2    184.82  19.99    1.857  0.75( 0.50) 0.67   151.1 LR021213.1
      3    180.83  22.67    1.721  0.75( 0.50) 0.67   164.3 LR021200.0
      4    151.46  30.18    1.450  0.75( 0.50) 0.67   176.7 LR021213.3
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    184.82  Tc(MIN.) =  19.99
  AREA-AVERAGED Fm(INCH/HR) =  0.50  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.67  EFFECTIVE AREA(ACRES) =    151.14

****************************************************************************
  FLOW PROCESS FROM NODE LR021216.0 TO NODE LR021217.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1470.00  DOWNSTREAM(FEET) =  1415.00
  FLOW LENGTH(FEET) =  1351.25   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   7.00   GIVEN BOX HEIGHT(FEET) =   3.00
  FLOWDEPTH IN BOX IS  1.29 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  20.57
  BOX-FLOW(CFS) =    185.27
  BOX-FLOW TRAVEL TIME(MIN.) =   1.09    Tc(MIN.) =  21.08
  LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21217.00 =  8175.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021217.0 TO NODE LR021217.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.08
```

```
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.798
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       12.77      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =   12.77      SUBAREA RUNOFF(CFS) =   15.51
 EFFECTIVE AREA(ACRES) =    163.91   AREA-AVERAGED Fm(INCH/HR) =  0.49
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.66
 TOTAL AREA(ACRES) =    189.46       PEAK FLOW RATE(CFS) =     192.37

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    193.27  20.97    1.804  0.75( 0.49) 0.66   163.9 LR021210.0
     2    193.21  20.97    1.804  0.75( 0.49) 0.66   163.9 LR021213.1
     3    188.85  23.61    1.680  0.75( 0.49) 0.66   177.0 LR021200.0
     4    158.42  31.13    1.423  0.75( 0.49) 0.66   189.5 LR021213.3
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    193.27  Tc(MIN.) =  20.97
 AREA-AVERAGED Fm(INCH/HR) =  0.49  AREA-AVERAGED Fp(INCH/HR) =  0.75
 AREA-AVERAGED Ap =  0.66  EFFECTIVE AREA(ACRES) =    163.92

****************************************************************************
 FLOW PROCESS FROM NODE LR021217.0 TO NODE LR021236.0 IS CODE =  48
----------------------------------------------------------------------------
 >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1415.00  DOWNSTREAM(FEET) =  1358.00
 FLOW LENGTH(FEET) =  1911.29   MANNING'S N =  0.014
 GIVEN BOX BASEWIDTH(FEET) =   8.00   GIVEN BOX HEIGHT(FEET) =   3.00
 FLOWDEPTH IN BOX IS  1.32 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  18.26
 BOX-FLOW(CFS) =    193.27
 BOX-FLOW TRAVEL TIME(MIN.) =   1.74    Tc(MIN.) =  22.71
 LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21236.00 = 10087.07 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021236.0 TO NODE LR021236.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  22.71
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.720
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       19.73      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =   19.73      SUBAREA RUNOFF(CFS) =   22.57
 EFFECTIVE AREA(ACRES) =    183.65   AREA-AVERAGED Fm(INCH/HR) =  0.49
```



```
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.65
 TOTAL AREA(ACRES) =    209.19       PEAK FLOW RATE(CFS) =     203.38

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    204.66  22.54    1.727  0.75( 0.49) 0.65   183.6 LR021213.1
     2    204.06  22.62    1.724  0.75( 0.49) 0.65   183.7 LR021210.0
     3    199.94  25.11    1.619  0.75( 0.49) 0.65   196.8 LR021200.0
     4    168.24  32.63    1.384  0.75( 0.49) 0.65   209.2 LR021213.3
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    204.06  Tc(MIN.) =  22.62
 AREA-AVERAGED Fm(INCH/HR) =  0.49  AREA-AVERAGED Fp(INCH/HR) =  0.75
 AREA-AVERAGED Ap =  0.65  EFFECTIVE AREA(ACRES) =    183.65

****************************************************************************
 FLOW PROCESS FROM NODE LR021236.0 TO NODE LR021236.0 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE LR021220.0 TO NODE LR021221.0 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   765.06
 ELEVATION DATA: UPSTREAM(FEET) =   1620.00  DOWNSTREAM(FEET) =   1580.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.585
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.719
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 PUBLIC PARK                B        8.02      0.75      0.85    56   12.41
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        0.68      0.75      0.70    56   11.25
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.28      0.75      0.60    56   10.59
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.83
 SUBAREA RUNOFF(CFS) =     16.95
 TOTAL AREA(ACRES) =      8.98   PEAK FLOW RATE(CFS) =     16.95

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

****************************************************************************
 FLOW PROCESS FROM NODE LR021221.0 TO NODE LR021222.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
```

```
  ELEVATION DATA: UPSTREAM(FEET) =   1580.00  DOWNSTREAM(FEET) =   1515.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   731.02   CHANNEL SLOPE =  0.0889
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     16.95
  FLOW VELOCITY(FEET/SEC.) =   2.96   FLOW DEPTH(FEET) =   0.34
  TRAVEL TIME(MIN.) =   4.12   Tc(MIN.) =  14.71
  LONGEST FLOWPATH FROM NODE  21220.00 TO NODE  21222.00 =  1496.08 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021222.0 TO NODE LR021222.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  14.71
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.232
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.88      0.75      0.60    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        9.97      0.63      1.00    65
  PUBLIC PARK                B        3.94      0.75      0.85    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.50      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.90
  SUBAREA AREA(ACRES) =   17.29      SUBAREA RUNOFF(CFS) =   25.29
  EFFECTIVE AREA(ACRES) =     26.27   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.88
  TOTAL AREA(ACRES) =     26.27       PEAK FLOW RATE(CFS) =      38.31

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

****************************************************************************
  FLOW PROCESS FROM NODE LR021222.0 TO NODE LR021223.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1515.00  DOWNSTREAM ELEVATION(FEET) = 1500.00
  STREET LENGTH(FEET) =   477.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.79

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      46.93
    ***STREET FLOWING FULL***
```



```
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.54
    HALFSTREET FLOOD WIDTH(FEET) =   19.85
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.45
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.93
  STREET FLOW TRAVEL TIME(MIN.) =   1.46   Tc(MIN.) =  16.16
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.109
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       11.55      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   11.55      SUBAREA RUNOFF(CFS) =   17.26
  EFFECTIVE AREA(ACRES) =     37.82    AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =     37.82       PEAK FLOW RATE(CFS) =      52.65

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.55   HALFSTREET FLOOD WIDTH(FEET) =  20.64
  FLOW VELOCITY(FEET/SEC.) =  5.69   DEPTH*VELOCITY(FT*FT/SEC.) =   3.15
  LONGEST FLOWPATH FROM NODE  21220.00 TO NODE  21223.00 =  1973.58 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021223.0 TO NODE LR021224.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1500.00  DOWNSTREAM ELEVATION(FEET) = 1480.00
  STREET LENGTH(FEET) =   869.02   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      63.33
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.61
    HALFSTREET FLOOD WIDTH(FEET) =   23.45
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.40
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.29
  STREET FLOW TRAVEL TIME(MIN.) =   2.68   Tc(MIN.) =  18.85
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.923
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

```
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        8.47      0.75      0.60    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        8.69      0.63      1.00    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.80
  SUBAREA AREA(ACRES) =   17.16      SUBAREA RUNOFF(CFS) =   21.35
  EFFECTIVE AREA(ACRES) =     54.98    AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     54.98        PEAK FLOW RATE(CFS) =      67.69

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.62   HALFSTREET FLOOD WIDTH(FEET) =  24.00
  FLOW VELOCITY(FEET/SEC.) =  5.53   DEPTH*VELOCITY(FT*FT/SEC.) =   3.43
  LONGEST FLOWPATH FROM NODE  21220.00 TO NODE  21224.00 =  2842.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021224.0 TO NODE LR021225.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1480.00  DOWNSTREAM ELEVATION(FEET) = 1473.00
  STREET LENGTH(FEET) =   240.38   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.88

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      70.22
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.65
    HALFSTREET FLOOD WIDTH(FEET) =   24.77
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.55
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.63
  STREET FLOW TRAVEL TIME(MIN.) =   0.72   Tc(MIN.) =  19.57
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.880
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.82      0.75      0.60    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        0.13      0.63      1.00    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.61
  SUBAREA AREA(ACRES) =    3.95      SUBAREA RUNOFF(CFS) =    5.07
```



```
  EFFECTIVE AREA(ACRES) =     58.93    AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.78
  TOTAL AREA(ACRES) =     58.93        PEAK FLOW RATE(CFS) =      70.63

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.65   HALFSTREET FLOOD WIDTH(FEET) =  24.77
  FLOW VELOCITY(FEET/SEC.) =  5.58   DEPTH*VELOCITY(FT*FT/SEC.) =   3.65
  LONGEST FLOWPATH FROM NODE  21220.00 TO NODE  21225.00 =  3082.98 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021225.0 TO NODE LR021233.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1473.00  DOWNSTREAM(FEET) =  1423.00
  FLOW LENGTH(FEET) =  1355.56   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   6.00   GIVEN BOX HEIGHT(FEET) =   1.50
  FLOWDEPTH IN BOX IS  0.79 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  14.89
  BOX-FLOW(CFS) =     70.63
  BOX-FLOW TRAVEL TIME(MIN.) =   1.52    Tc(MIN.) =  21.09
  LONGEST FLOWPATH FROM NODE  21220.00 TO NODE  21233.00 =  4438.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021233.0 TO NODE LR021233.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.09
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.798
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       16.86      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   16.86      SUBAREA RUNOFF(CFS) =   20.47
  EFFECTIVE AREA(ACRES) =     75.79   AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.74
  TOTAL AREA(ACRES) =     75.79       PEAK FLOW RATE(CFS) =      86.73

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

****************************************************************************
  FLOW PROCESS FROM NODE LR021233.0 TO NODE LR021233.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  21.09
  RAINFALL INTENSITY(INCH/HR) =   1.80
  AREA-AVERAGED Fm(INCH/HR) =  0.53
```

```
  AREA-AVERAGED Fp(INCH/HR) =  0.71
  AREA-AVERAGED Ap =  0.74
  EFFECTIVE STREAM AREA(ACRES) =    75.79
  TOTAL STREAM AREA(ACRES) =    75.79
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     86.73

****************************************************************************
  FLOW PROCESS FROM NODE LR021230.0 TO NODE LR021231.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   568.64
  ELEVATION DATA: UPSTREAM(FEET) =   1480.00  DOWNSTREAM(FEET) =   1450.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.384
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.922
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.58      0.75      0.60    56    9.38
  SCHOOL                     B        0.10      0.75      0.60    56    9.38
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     10.42
  TOTAL AREA(ACRES) =      4.68   PEAK FLOW RATE(CFS) =     10.42

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

****************************************************************************
  FLOW PROCESS FROM NODE LR021231.0 TO NODE LR021232.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1450.00  DOWNSTREAM ELEVATION(FEET) = 1430.00
  STREET LENGTH(FEET) =   739.29   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.86

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      14.59
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.42
    HALFSTREET FLOOD WIDTH(FEET) =   13.31
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.72
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.58
```



```
  STREET FLOW TRAVEL TIME(MIN.) =   3.31   Tc(MIN.) =  12.70
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.437
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.65      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =     4.65      SUBAREA RUNOFF(CFS) =     8.32
  EFFECTIVE AREA(ACRES) =      9.33    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =      9.33        PEAK FLOW RATE(CFS) =      16.70

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.44   HALFSTREET FLOOD WIDTH(FEET) =  14.13
  FLOW VELOCITY(FEET/SEC.) =  3.82   DEPTH*VELOCITY(FT*FT/SEC.) =   1.68
  LONGEST FLOWPATH FROM NODE  21230.00 TO NODE  21232.00 =  1307.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021232.0 TO NODE LR021233.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1430.00  DOWNSTREAM ELEVATION(FEET) = 1423.00
  STREET LENGTH(FEET) =   666.66   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      23.73
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.55
    HALFSTREET FLOOD WIDTH(FEET) =   19.77
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.89
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.60
  STREET FLOW TRAVEL TIME(MIN.) =   3.84   Tc(MIN.) =  16.54
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.080
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        9.55      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =     9.55      SUBAREA RUNOFF(CFS) =   14.02
```

```
 EFFECTIVE AREA(ACRES) =     18.88    AREA-AVERAGED Fm(INCH/HR) =  0.45
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =     18.88        PEAK FLOW RATE(CFS) =      27.72

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.58   HALFSTREET FLOOD WIDTH(FEET) =  21.02
 FLOW VELOCITY(FEET/SEC.) =  3.01   DEPTH*VELOCITY(FT*FT/SEC.) =   1.74
 LONGEST FLOWPATH FROM NODE  21230.00 TO NODE  21233.00 =  1974.59 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021233.0 TO NODE LR021233.0 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  16.54
 RAINFALL INTENSITY(INCH/HR) =   2.08
 AREA-AVERAGED Fm(INCH/HR) =  0.45
 AREA-AVERAGED Fp(INCH/HR) =  0.75
 AREA-AVERAGED Ap =  0.60
 EFFECTIVE STREAM AREA(ACRES) =    18.88
 TOTAL STREAM AREA(ACRES) =    18.88
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     27.72

 ** CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1     86.73  21.09    1.798  0.71( 0.53) 0.74    75.8 LR021220.0
     2     27.72  16.54    2.080  0.75( 0.45) 0.60    18.9 LR021230.0

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    110.84  16.54    2.080  0.72( 0.51) 0.71    78.3 LR021230.0
     2    109.66  21.09    1.798  0.72( 0.51) 0.71    94.7 LR021220.0

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    110.84    Tc(MIN.) =    16.54
 EFFECTIVE AREA(ACRES) =    78.32   AREA-AVERAGED Fm(INCH/HR) =  0.51
 AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.71
 TOTAL AREA(ACRES) =     94.67
 LONGEST FLOWPATH FROM NODE  21220.00 TO NODE  21233.00 =  4438.54 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021233.0 TO NODE LR021234.0 IS CODE =  48
----------------------------------------------------------------------------
 >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1423.00  DOWNSTREAM(FEET) =  1373.00
```



```
 FLOW LENGTH(FEET) =  1343.35   MANNING'S N =  0.014
 GIVEN BOX BASEWIDTH(FEET) =   8.00   GIVEN BOX HEIGHT(FEET) =   1.50
 FLOWDEPTH IN BOX IS  0.86 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  16.16
 BOX-FLOW(CFS) =    110.84
 BOX-FLOW TRAVEL TIME(MIN.) =   1.39    Tc(MIN.) =  17.92
 LONGEST FLOWPATH FROM NODE  21220.00 TO NODE  21234.00 =  5781.89 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021234.0 TO NODE LR021234.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  17.92
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.982
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       30.53      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =   30.53      SUBAREA RUNOFF(CFS) =   42.13
 EFFECTIVE AREA(ACRES) =    108.85   AREA-AVERAGED Fm(INCH/HR) =  0.49
 AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.68
 TOTAL AREA(ACRES) =    125.20       PEAK FLOW RATE(CFS) =     146.06

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    146.54  17.85    1.987  0.72( 0.49) 0.68   108.9 LR021230.0
     2    139.84  22.34    1.737  0.72( 0.50) 0.69   125.2 LR021220.0
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    146.54  Tc(MIN.) =  17.85
 AREA-AVERAGED Fm(INCH/HR) =  0.49  AREA-AVERAGED Fp(INCH/HR) =  0.72
 AREA-AVERAGED Ap =  0.68  EFFECTIVE AREA(ACRES) =    108.85

****************************************************************************
 FLOW PROCESS FROM NODE LR021234.0 TO NODE LR021235.0 IS CODE =  48
----------------------------------------------------------------------------
 >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1373.00  DOWNSTREAM(FEET) =  1359.00
 FLOW LENGTH(FEET) =   833.47   MANNING'S N =  0.014
 GIVEN BOX BASEWIDTH(FEET) =  15.00   GIVEN BOX HEIGHT(FEET) =   1.50
 FLOWDEPTH IN BOX IS  0.85 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  11.50
 BOX-FLOW(CFS) =    146.54
 BOX-FLOW TRAVEL TIME(MIN.) =   1.21    Tc(MIN.) =  19.06
 LONGEST FLOWPATH FROM NODE  21220.00 TO NODE  21235.00 =  6615.36 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021235.0 TO NODE LR021235.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```

```
  MAINLINE Tc(MIN) =  19.06
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.910
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B        8.16      0.75      0.25    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        6.30      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
  SUBAREA AREA(ACRES) =   14.46      SUBAREA RUNOFF(CFS) =   20.94
  EFFECTIVE AREA(ACRES) =    123.31   AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.65
  TOTAL AREA(ACRES) =    139.66       PEAK FLOW RATE(CFS) =     159.98

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    160.40  18.99    1.914  0.73( 0.47) 0.65   123.3 LR021230.0
      2    152.27  23.45    1.687  0.72( 0.48) 0.66   139.7 LR021220.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    160.40  Tc(MIN.) =  18.99
  AREA-AVERAGED Fm(INCH/HR) =  0.47  AREA-AVERAGED Fp(INCH/HR) =  0.73
  AREA-AVERAGED Ap =  0.65  EFFECTIVE AREA(ACRES) =    123.31

****************************************************************************
  FLOW PROCESS FROM NODE LR021235.0 TO NODE LR021236.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1359.00  DOWNSTREAM(FEET) =  1358.00
  FLOW LENGTH(FEET) =   230.02   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  31.00   GIVEN BOX HEIGHT(FEET) =   1.50
  FLOWDEPTH IN BOX IS  0.85 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =   6.08
  BOX-FLOW(CFS) =    160.40
  BOX-FLOW TRAVEL TIME(MIN.) =   0.63    Tc(MIN.) =  19.63
  LONGEST FLOWPATH FROM NODE  21220.00 TO NODE  21236.00 =  6845.38 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021236.0 TO NODE LR021236.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    160.40  19.60    1.879  0.73( 0.47) 0.65   123.3 LR021230.0
      2    152.27  24.03    1.662  0.72( 0.48) 0.66   139.7 LR021220.0
  LONGEST FLOWPATH FROM NODE  21220.00 TO NODE  21236.00 =  6845.38 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
```



```
      1    204.66  22.54    1.727  0.75( 0.49) 0.65   183.6 LR021213.1
      2    204.06  22.62    1.724  0.75( 0.49) 0.65   183.7 LR021210.0
      3    199.94  25.11    1.619  0.75( 0.49) 0.65   196.8 LR021200.0
      4    168.24  32.63    1.384  0.75( 0.49) 0.65   209.2 LR021213.3
  LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21236.00 = 10087.07 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    360.07  19.60    1.879  0.74( 0.48) 0.65   283.0 LR021230.0
      2    359.66  22.54    1.727  0.74( 0.48) 0.65   317.8 LR021213.1
      3    358.91  22.62    1.724  0.74( 0.48) 0.65   318.1 LR021210.0
      4    354.00  24.03    1.662  0.74( 0.48) 0.66   330.7 LR021220.0
      5    346.64  25.11    1.619  0.74( 0.48) 0.66   336.4 LR021200.0
      6    284.73  32.63    1.384  0.74( 0.48) 0.66   348.9 LR021213.3
    TOTAL AREA(ACRES) =    348.85

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      360.07  Tc(MIN.) =   19.596
  EFFECTIVE AREA(ACRES) =    282.97  AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.65
  TOTAL AREA(ACRES) =    348.85
  LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21236.00 = 10087.07 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021236.0 TO NODE LR021236.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021236.0 TO NODE LR021246.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1358.00  DOWNSTREAM(FEET) =  1311.00
  FLOW LENGTH(FEET) =  1973.53   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   9.00   GIVEN BOX HEIGHT(FEET) =   4.00
  FLOWDEPTH IN BOX IS  1.98 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  20.22
  BOX-FLOW(CFS) =    360.07
  BOX-FLOW TRAVEL TIME(MIN.) =   1.63    Tc(MIN.) =  21.22
  LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21246.00 = 12060.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021246.0 TO NODE LR021246.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.22
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.791
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       20.64      0.75      0.60    56
  COMMERCIAL                 B        3.79      0.75      0.10    56
  MOBILE HOME PARK           B       30.62      0.75      0.25    56
```

```
  PUBLIC PARK                B        2.31      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.39
  SUBAREA AREA(ACRES) =   57.36      SUBAREA RUNOFF(CFS) =   77.39
  EFFECTIVE AREA(ACRES) =    340.33   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.61
  TOTAL AREA(ACRES) =    406.21       PEAK FLOW RATE(CFS) =     411.17

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    412.54  21.14    1.795  0.74( 0.45) 0.61   340.3 LR021230.0
      2    408.72  23.99    1.664  0.74( 0.45) 0.61   375.2 LR021213.1
      3    408.94  24.00    1.664  0.74( 0.45) 0.61   375.5 LR021210.0
      4    403.37  25.34    1.610  0.74( 0.46) 0.62   388.1 LR021220.0
      5    395.65  26.36    1.572  0.74( 0.46) 0.62   393.8 LR021200.0
      6    327.29  33.90    1.352  0.74( 0.46) 0.62   406.2 LR021213.3
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    412.54  Tc(MIN.) =  21.14
  AREA-AVERAGED Fm(INCH/HR) =  0.45  AREA-AVERAGED Fp(INCH/HR) =  0.74
  AREA-AVERAGED Ap =  0.61  EFFECTIVE AREA(ACRES) =    340.33

****************************************************************************
  FLOW PROCESS FROM NODE LR021246.0 TO NODE LR021246.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  21.14
  RAINFALL INTENSITY(INCH/HR) =   1.80
  AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.74
  AREA-AVERAGED Ap =  0.61
  EFFECTIVE STREAM AREA(ACRES) =   340.33
  TOTAL STREAM AREA(ACRES) =   406.21
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    412.54

****************************************************************************
  FLOW PROCESS FROM NODE LR021240.0 TO NODE LR021241.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   726.27
  ELEVATION DATA: UPSTREAM(FEET) =   1550.00  DOWNSTREAM(FEET) =   1518.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.728
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.697
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        6.78      0.75      0.60    56   10.73
```



```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     13.72
  TOTAL AREA(ACRES) =      6.78   PEAK FLOW RATE(CFS) =     13.72

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

****************************************************************************
  FLOW PROCESS FROM NODE LR021241.0 TO NODE LR021242.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1518.00  DOWNSTREAM ELEVATION(FEET) = 1465.00
  STREET LENGTH(FEET) =  1349.95   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.78

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      24.50
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.46
    HALFSTREET FLOOD WIDTH(FEET) =   15.31
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.84
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.25
  STREET FLOW TRAVEL TIME(MIN.) =   4.65   Tc(MIN.) =  15.38
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.173
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       13.82      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   13.82      SUBAREA RUNOFF(CFS) =   21.44
  EFFECTIVE AREA(ACRES) =     20.60    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     20.60        PEAK FLOW RATE(CFS) =      31.96

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.50   HALFSTREET FLOOD WIDTH(FEET) =  17.06
  FLOW VELOCITY(FEET/SEC.) =  5.15   DEPTH*VELOCITY(FT*FT/SEC.) =   2.57
  LONGEST FLOWPATH FROM NODE  21240.00 TO NODE  21242.00 =  2076.22 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021242.0 TO NODE LR021243.0 IS CODE =  63
```

```
------------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
==============================================================================
  UPSTREAM ELEVATION(FEET) = 1465.00  DOWNSTREAM ELEVATION(FEET) = 1420.00
  STREET LENGTH(FEET) =  1314.48   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.81

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      41.53
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.55
    HALFSTREET FLOOD WIDTH(FEET) =   19.53
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.19
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.85
  STREET FLOW TRAVEL TIME(MIN.) =   4.22   Tc(MIN.) =  19.60
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.878
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       14.61      0.75      0.60    56
  COMMERCIAL                 B        0.19      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.59
  SUBAREA AREA(ACRES) =   14.80      SUBAREA RUNOFF(CFS) =   19.11
  EFFECTIVE AREA(ACRES) =     35.40    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     35.40        PEAK FLOW RATE(CFS) =      45.61

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.56   HALFSTREET FLOOD WIDTH(FEET) =  20.23
  FLOW VELOCITY(FEET/SEC.) =  5.33   DEPTH*VELOCITY(FT*FT/SEC.) =   3.00
  LONGEST FLOWPATH FROM NODE  21240.00 TO NODE  21243.00 =  3390.70 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021243.0 TO NODE LR021244.0 IS CODE =  63
------------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
==============================================================================
  UPSTREAM ELEVATION(FEET) = 1420.00  DOWNSTREAM ELEVATION(FEET) = 1372.00
  STREET LENGTH(FEET) =  1306.02   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
```



```
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.79

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      53.76
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.58
    HALFSTREET FLOOD WIDTH(FEET) =   21.28
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.70
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.33
  STREET FLOW TRAVEL TIME(MIN.) =   3.82   Tc(MIN.) =  23.42
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.688
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       14.60      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   14.60      SUBAREA RUNOFF(CFS) =   16.28
  EFFECTIVE AREA(ACRES) =     50.00    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     50.00        PEAK FLOW RATE(CFS) =      55.83

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.59   HALFSTREET FLOOD WIDTH(FEET) =  21.63
  FLOW VELOCITY(FEET/SEC.) =  5.73   DEPTH*VELOCITY(FT*FT/SEC.) =   3.39
  LONGEST FLOWPATH FROM NODE  21240.00 TO NODE  21244.00 =  4696.72 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021244.0 TO NODE LR021245.0 IS CODE =  63
------------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
==============================================================================
  UPSTREAM ELEVATION(FEET) = 1372.00  DOWNSTREAM ELEVATION(FEET) = 1330.00
  STREET LENGTH(FEET) =  1339.26   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.83

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      64.13
```

```
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.63
  HALFSTREET FLOOD WIDTH(FEET) =   23.57
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.58
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.51
 STREET FLOW TRAVEL TIME(MIN.) =   4.00   Tc(MIN.) =  27.42
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.536
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       11.63      0.75      0.60    56
 SCHOOL                     B        5.33      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =   16.96      SUBAREA RUNOFF(CFS) =   16.59
 EFFECTIVE AREA(ACRES) =     66.96    AREA-AVERAGED Fm(INCH/HR) =  0.45
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =     66.96        PEAK FLOW RATE(CFS) =      65.56

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.63   HALFSTREET FLOOD WIDTH(FEET) =  23.74
 FLOW VELOCITY(FEET/SEC.) =  5.63   DEPTH*VELOCITY(FT*FT/SEC.) =   3.56
 LONGEST FLOWPATH FROM NODE  21240.00 TO NODE  21245.00 =  6035.98 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021245.0 TO NODE LR021246.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1330.00  DOWNSTREAM ELEVATION(FEET) = 1311.00
 STREET LENGTH(FEET) =   939.73   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.92

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      69.38
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.68
   HALFSTREET FLOOD WIDTH(FEET) =   26.92
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.86
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.33
 STREET FLOW TRAVEL TIME(MIN.) =   3.22   Tc(MIN.) =  30.64
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.437
 SUBAREA LOSS RATE DATA(AMC  II):
```



```
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        2.70      0.75      0.60    56
 MOBILE HOME PARK           B        4.66      0.75      0.25    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.38
 SUBAREA AREA(ACRES) =    7.36      SUBAREA RUNOFF(CFS) =    7.64
 EFFECTIVE AREA(ACRES) =     74.32    AREA-AVERAGED Fm(INCH/HR) =  0.43
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.58
 TOTAL AREA(ACRES) =     74.32        PEAK FLOW RATE(CFS) =      67.24

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.68   HALFSTREET FLOOD WIDTH(FEET) =  26.67
 FLOW VELOCITY(FEET/SEC.) =  4.80   DEPTH*VELOCITY(FT*FT/SEC.) =   3.27
 LONGEST FLOWPATH FROM NODE  21240.00 TO NODE  21246.00 =  6975.71 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021246.0 TO NODE LR021246.0 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  30.64
 RAINFALL INTENSITY(INCH/HR) =   1.44
 AREA-AVERAGED Fm(INCH/HR) =  0.43
 AREA-AVERAGED Fp(INCH/HR) =  0.75
 AREA-AVERAGED Ap =  0.58
 EFFECTIVE STREAM AREA(ACRES) =    74.32
 TOTAL STREAM AREA(ACRES) =    74.32
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     67.24

 ** CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    412.54  21.14    1.795  0.74( 0.45) 0.61   340.3 LR021230.0
     1    408.72  23.99    1.664  0.74( 0.45) 0.61   375.2 LR021213.1
     1    408.94  24.00    1.664  0.74( 0.45) 0.61   375.5 LR021210.0
     1    403.37  25.34    1.610  0.74( 0.46) 0.62   388.1 LR021220.0
     1    395.65  26.36    1.572  0.74( 0.46) 0.62   393.8 LR021200.0
     1    327.29  33.90    1.352  0.74( 0.46) 0.62   406.2 LR021213.3
     2     67.24  30.64    1.437  0.75( 0.43) 0.58    74.3 LR021240.0

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    475.46  21.14    1.795  0.74( 0.45) 0.60   391.6 LR021230.0
     2    473.27  23.99    1.664  0.74( 0.45) 0.61   433.4 LR021213.1
     3    473.49  24.00    1.664  0.74( 0.45) 0.61   433.7 LR021210.0
     4    468.57  25.34    1.610  0.74( 0.45) 0.61   449.5 LR021220.0
```

```
      5    461.31  26.36    1.572  0.74( 0.45) 0.61   457.7 LR021200.0
      6    424.07  30.64    1.437  0.74( 0.45) 0.61   475.2 LR021240.0
      7    388.89  33.90    1.352  0.74( 0.45) 0.61   480.5 LR021213.3

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    475.46    Tc(MIN.) =    21.14
  EFFECTIVE AREA(ACRES) =   391.59   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =    480.53
  LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21246.00 = 12060.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021246.0 TO NODE LR021247.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1311.00  DOWNSTREAM(FEET) =  1290.00
  FLOW LENGTH(FEET) =  1258.84   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  12.00   GIVEN BOX HEIGHT(FEET) =   4.00
  FLOWDEPTH IN BOX IS  2.13 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  18.57
  BOX-FLOW(CFS) =    475.46
  BOX-FLOW TRAVEL TIME(MIN.) =   1.13    Tc(MIN.) =  22.26
  LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21247.00 = 13319.44 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021247.0 TO NODE LR021247.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  22.26
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.740
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       23.54      0.75      0.60    56
  COMMERCIAL                 B        1.26      0.75      0.10    56
  MOBILE HOME PARK           B        0.22      0.75      0.25    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        1.80      0.63      1.00    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.73
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   26.82      SUBAREA RUNOFF(CFS) =   31.35
  EFFECTIVE AREA(ACRES) =    418.41   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =    507.35       PEAK FLOW RATE(CFS) =     487.35

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    488.37  22.21    1.743  0.74( 0.45) 0.60   418.4 LR021230.0
      2    486.91  24.96    1.625  0.74( 0.45) 0.61   460.5 LR021210.0
      3    485.84  25.01    1.623  0.74( 0.45) 0.61   460.2 LR021213.1
      4    482.24  26.26    1.576  0.74( 0.45) 0.61   476.4 LR021220.0
```



```
      5    475.34  27.24    1.542  0.74( 0.45) 0.61   484.5 LR021200.0
      6    434.25  31.50    1.413  0.74( 0.45) 0.61   502.0 LR021240.0
      7    401.95  34.73    1.333  0.74( 0.45) 0.61   507.4 LR021213.3
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    488.37  Tc(MIN.) =  22.21
  AREA-AVERAGED Fm(INCH/HR) =  0.45  AREA-AVERAGED Fp(INCH/HR) =  0.74
  AREA-AVERAGED Ap =  0.60  EFFECTIVE AREA(ACRES) =    418.41

****************************************************************************
  FLOW PROCESS FROM NODE LR021247.0 TO NODE LR021247.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021167.0 TO NODE LR021167.0 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 21167.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      692.83    Tc(MIN.) =  30.65
  AREA-AVERAGED Fm(INCH/HR) =  0.49    Ybar = 0.57
  TOTAL AREA(ACRES) =     741.39
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21167.00 = 13765.49 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021167.0 TO NODE LR021167.0 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      692.83    Tc(MIN.) =  30.65
  AREA-AVERAGED Fm(INCH/HR) =  0.49    Ybar = 0.57
  TOTAL AREA(ACRES) =     741.39
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21167.00 = 13765.49 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021167.0 TO NODE LR021167.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021167.0 TO NODE LR021247.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1320.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1290.00
  FLOW LENGTH(FEET) =  1357.45   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  90.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  90.0 INCH PIPE IS  50.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  27.08
  PIPE-FLOW(CFS) =    692.83
```

```
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.84    Tc(MIN.) =  31.48
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21247.00 = 15122.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021247.0 TO NODE LR021247.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  31.48
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.414
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B        0.01      0.75      0.25    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        7.68      0.75      0.60    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        2.53      0.63      1.00    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.71
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   10.22
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.56;6H= 2.12;24H= 4.26
  S-GRAPH: VALLEY(DEV.)= 92.2%;VALLEY(UNDEV.)/DESERT=  7.8%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.52; LAG(HR) = 0.42; Fm(INCH/HR) = 0.49; Ybar = 0.57
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    751.61
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21247.00 = 15122.94 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0341; Lca/L=0.4,n=.0305; Lca/L=0.5,n=.0281;Lca/L=0.6,n=.0262
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     125.76
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    698.67
  TOTAL AREA(ACRES) =    751.61       PEAK FLOW RATE(CFS) =     698.67

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

****************************************************************************
  FLOW PROCESS FROM NODE LR021247.0 TO NODE LR021247.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =      698.67    Tc(MIN.) =  31.48
  AREA-AVERAGED Fm(INCH/HR) =  0.49    Ybar = 0.57
  TOTAL AREA(ACRES) =     751.61
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21247.00 = 15122.94 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    488.37  22.21    1.743  0.74( 0.45) 0.60   418.4 LR021230.0
      2    486.91  24.96    1.625  0.74( 0.45) 0.61   460.5 LR021210.0
```



```
      3    485.84  25.01    1.623  0.74( 0.45) 0.61   460.2 LR021213.1
      4    482.24  26.26    1.576  0.74( 0.45) 0.61   476.4 LR021220.0
      5    475.34  27.24    1.542  0.74( 0.45) 0.61   484.5 LR021200.0
      6    434.25  31.50    1.413  0.74( 0.45) 0.61   502.0 LR021240.0
      7    401.95  34.73    1.333  0.74( 0.45) 0.61   507.4 LR021213.3
  LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21247.00 = 13319.44 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.56;6H= 2.12;24H= 4.26
  S-GRAPH: VALLEY(DEV.)= 93.7%;VALLEY(UNDEV.)/DESERT=  6.3%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.52; LAG(HR) = 0.42; Fm(INCH/HR) = 0.48; Ybar = 0.55
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.94; 30M = 0.94; 1HR = 0.94;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1258.96
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21247.00 = 15122.94 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0341; Lca/L=0.4,n=.0305; Lca/L=0.5,n=.0281;Lca/L=0.6,n=.0262
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     216.47
  PEAK FLOW RATE(CFS) =    1156.51

****************************************************************************
  FLOW PROCESS FROM NODE LR021247.0 TO NODE LR021247.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021247.0 TO NODE LR021248.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1290.00  DOWNSTREAM(FEET) =   1280.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   452.82   CHANNEL SLOPE =  0.0221
  CHANNEL BASE(FEET) =    9.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   4.50
  CHANNEL FLOW THRU SUBAREA(CFS) =   1156.51
  FLOW VELOCITY(FEET/SEC.) =  24.04   FLOW DEPTH(FEET) =   3.15
  TRAVEL TIME(MIN.) =   0.31   Tc(MIN.) =  31.80
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21248.00 = 15575.76 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021248.0 TO NODE LR021248.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  31.80
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.405
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B       37.17      0.75      0.25    56
  COMMERCIAL                 B       10.19      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       34.08      0.75      0.60    56
```

```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.38
  SUBAREA AREA(ACRES) =   81.44
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.56;6H= 2.12;24H= 4.26
  S-GRAPH: VALLEY(DEV.)= 94.1%;VALLEY(UNDEV.)/DESERT=  5.9%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.53; LAG(HR) = 0.42; Fm(INCH/HR) = 0.46; Ybar = 0.54
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.94; 30M = 0.94; 1HR = 0.94;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1340.40
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21248.00 = 15575.76 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0336; Lca/L=0.4,n=.0301; Lca/L=0.5,n=.0276;Lca/L=0.6,n=.0258
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     235.75
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1234.42
  TOTAL AREA(ACRES) =   1340.40       PEAK FLOW RATE(CFS) =    1234.42

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.56; 6HR = 2.12; 24HR = 4.26

****************************************************************************
  FLOW PROCESS FROM NODE LR021248.0 TO NODE LR021248.0 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 21248.dna
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =   1340.40  TC(MIN.) =     31.80
  AREA-AVERAGED Fm(INCH/HR)=  0.46   Ybar =  0.54
  PEAK FLOW RATE(CFS)   =   1234.42
============================================================================
============================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

```
******************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                        Analysis prepared by:

                        San Bernardino County
                  Transportation/ Flood Control Department

                        Water Resources Division

 ************************ DESCRIPTION OF STUDY *************************
* LR 0213ZZ FILE                                                       *
*  25-YEAR STORM                                                       *
*                                                                      *
 **********************************************************************

  FILE NAME: LR0213ZZ.Z25
  TIME/DATE OF STUDY: 11:26 02/23/2006
==============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 0.9600

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
```



```
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


******************************************************************************
  FLOW PROCESS FROM NODE LR021300.0 TO NODE LR021301.0 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   702.11
  ELEVATION DATA: UPSTREAM(FEET) =   1665.00  DOWNSTREAM(FEET) =   1630.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.326
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.759
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        3.89      0.75      0.70    56   10.98
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.29      0.75      0.60    56   10.33
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA RUNOFF(CFS) =     10.51
  TOTAL AREA(ACRES) =      5.18   PEAK FLOW RATE(CFS) =     10.51

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

******************************************************************************
  FLOW PROCESS FROM NODE LR021301.0 TO NODE LR021302.0 IS CODE =  63
------------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
==============================================================================
  UPSTREAM ELEVATION(FEET) = 1630.00  DOWNSTREAM ELEVATION(FEET) = 1627.00
  STREET LENGTH(FEET) =   166.02   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00
```

```
 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      12.74
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.41
   HALFSTREET FLOOD WIDTH(FEET) =   14.05
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.04
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.24
 STREET FLOW TRAVEL TIME(MIN.) =   0.91   Tc(MIN.) =  11.24
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.623
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        2.06      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.29      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
 SUBAREA AREA(ACRES) =    2.35      SUBAREA RUNOFF(CFS) =    4.46
 EFFECTIVE AREA(ACRES) =      7.53    AREA-AVERAGED Fm(INCH/HR) =  0.51
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
 TOTAL AREA(ACRES) =      7.53        PEAK FLOW RATE(CFS) =      14.33

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.42   HALFSTREET FLOOD WIDTH(FEET) =  14.68
 FLOW VELOCITY(FEET/SEC.) =  3.15   DEPTH*VELOCITY(FT*FT/SEC.) =   1.32
 LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21302.00 =   868.13 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021302.0 TO NODE LR021303.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1627.00  DOWNSTREAM ELEVATION(FEET) = 1623.00
 STREET LENGTH(FEET) =   202.20   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
```



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 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      16.37
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.43
   HALFSTREET FLOOD WIDTH(FEET) =   15.23
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.36
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.45
 STREET FLOW TRAVEL TIME(MIN.) =   1.00   Tc(MIN.) =  12.24
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.492
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        1.93      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.36      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
 SUBAREA AREA(ACRES) =    2.29      SUBAREA RUNOFF(CFS) =    4.08
 EFFECTIVE AREA(ACRES) =      9.82    AREA-AVERAGED Fm(INCH/HR) =  0.51
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
 TOTAL AREA(ACRES) =      9.82        PEAK FLOW RATE(CFS) =      17.53

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.44   HALFSTREET FLOOD WIDTH(FEET) =  15.62
 FLOW VELOCITY(FEET/SEC.) =  3.43   DEPTH*VELOCITY(FT*FT/SEC.) =   1.50
 LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21303.00 =  1070.33 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021303.0 TO NODE LR021304.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1623.00  DOWNSTREAM ELEVATION(FEET) = 1600.00
 STREET LENGTH(FEET) =   190.38   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.56

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      19.12
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.35
   HALFSTREET FLOOD WIDTH(FEET) =   11.24
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.92
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    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.43
  STREET FLOW TRAVEL TIME(MIN.) =   0.46   Tc(MIN.) =  12.70
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.437
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.38      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.45      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    1.83      SUBAREA RUNOFF(CFS) =    3.18
  EFFECTIVE AREA(ACRES) =     11.65    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     11.65        PEAK FLOW RATE(CFS) =      20.23

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =  11.48
  FLOW VELOCITY(FEET/SEC.) =  7.05   DEPTH*VELOCITY(FT*FT/SEC.) =   2.51
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21304.00 =  1260.71 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021304.0 TO NODE LR021305.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1600.00  DOWNSTREAM ELEVATION(FEET) = 1580.00
  STREET LENGTH(FEET) =   267.45   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.63

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      23.88
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.40
    HALFSTREET FLOOD WIDTH(FEET) =   13.59
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.08
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.42
  STREET FLOW TRAVEL TIME(MIN.) =   0.73   Tc(MIN.) =  13.43
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.357
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.80      0.75      0.60    56
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  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        3.59      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    4.39      SUBAREA RUNOFF(CFS) =    7.30
  EFFECTIVE AREA(ACRES) =     16.04    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     16.04        PEAK FLOW RATE(CFS) =      26.68

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.41   HALFSTREET FLOOD WIDTH(FEET) =  14.21
  FLOW VELOCITY(FEET/SEC.) =  6.24   DEPTH*VELOCITY(FT*FT/SEC.) =   2.56
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21305.00 =  1528.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021305.0 TO NODE LR021306.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1580.00  DOWNSTREAM ELEVATION(FEET) = 1555.00
  STREET LENGTH(FEET) =   439.49   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.67

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      35.46
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.46
    HALFSTREET FLOOD WIDTH(FEET) =   16.79
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.04
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.79
  STREET FLOW TRAVEL TIME(MIN.) =   1.21   Tc(MIN.) =  14.64
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.238
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        8.99      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.29      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   11.28      SUBAREA RUNOFF(CFS) =   17.55
  EFFECTIVE AREA(ACRES) =     27.32    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     27.32        PEAK FLOW RATE(CFS) =      42.51
```

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  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.49   HALFSTREET FLOOD WIDTH(FEET) =  18.00
  FLOW VELOCITY(FEET/SEC.) =  6.31   DEPTH*VELOCITY(FT*FT/SEC.) =   3.07
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21306.00 =  1967.65 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021306.0 TO NODE LR021307.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1555.00  DOWNSTREAM ELEVATION(FEET) = 1530.00
  STREET LENGTH(FEET) =   430.58   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.67

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      53.58
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.51
    HALFSTREET FLOOD WIDTH(FEET) =   18.69
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.95
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.57
  STREET FLOW TRAVEL TIME(MIN.) =   1.03   Tc(MIN.) =  15.68
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.148
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.82      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       11.14      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA AREA(ACRES) =   14.96      SUBAREA RUNOFF(CFS) =   22.13
  EFFECTIVE AREA(ACRES) =     42.28    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     42.28        PEAK FLOW RATE(CFS) =      62.43

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.53   HALFSTREET FLOOD WIDTH(FEET) =  19.66
  FLOW VELOCITY(FEET/SEC.) =  7.38   DEPTH*VELOCITY(FT*FT/SEC.) =   3.93
```



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  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21307.00 =  2398.23 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021307.0 TO NODE LR021308.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1530.00  DOWNSTREAM ELEVATION(FEET) = 1520.00
  STREET LENGTH(FEET) =   417.62   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.86

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      69.60
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.62
    HALFSTREET FLOOD WIDTH(FEET) =   24.12
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.63
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.50
  STREET FLOW TRAVEL TIME(MIN.) =   1.24   Tc(MIN.) =  16.91
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.052
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.69      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.54      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.66
  SUBAREA AREA(ACRES) =   10.23      SUBAREA RUNOFF(CFS) =   14.32
  EFFECTIVE AREA(ACRES) =     52.51    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     52.51        PEAK FLOW RATE(CFS) =      73.12

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.63   HALFSTREET FLOOD WIDTH(FEET) =  24.55
  FLOW VELOCITY(FEET/SEC.) =  5.72   DEPTH*VELOCITY(FT*FT/SEC.) =   3.61
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21308.00 =  2815.85 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021308.0 TO NODE LR021309.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
```

```
==========================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1520.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1445.00
  FLOW LENGTH(FEET) =  2140.63   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  19.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.36
  PIPE-FLOW(CFS) =     73.12
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.94    Tc(MIN.) =  18.86
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21309.00 =  4956.48 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021309.0 TO NODE LR021309.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN) =  18.86
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.923
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       52.35      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   52.35      SUBAREA RUNOFF(CFS) =   69.44
  EFFECTIVE AREA(ACRES) =    104.86   AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.64
  TOTAL AREA(ACRES) =    104.86       PEAK FLOW RATE(CFS) =     136.42

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

****************************************************************************
  FLOW PROCESS FROM NODE LR021309.0 TO NODE LR021310.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
==========================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1445.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1415.00
  FLOW LENGTH(FEET) =   762.02   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  24.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  22.42
  PIPE-FLOW(CFS) =    136.42
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.57    Tc(MIN.) =  19.42
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21310.00 =  5718.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021310.0 TO NODE LR021310.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
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```
  MAINLINE Tc(MIN) =  19.42
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.889
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       18.20      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   18.20      SUBAREA RUNOFF(CFS) =   23.59
  EFFECTIVE AREA(ACRES) =    123.06   AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.63
  TOTAL AREA(ACRES) =    123.06       PEAK FLOW RATE(CFS) =     156.82

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

****************************************************************************
  FLOW PROCESS FROM NODE LR021310.0 TO NODE LR021311.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
==========================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1415.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1356.00
  FLOW LENGTH(FEET) =  1371.34   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  25.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  23.97
  PIPE-FLOW(CFS) =    156.82
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.95    Tc(MIN.) =  20.38
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21311.00 =  7089.84 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021311.0 TO NODE LR021311.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN) =  20.38
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.835
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       19.39      0.75      0.60    56
  SCHOOL                     B       10.62      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   30.01      SUBAREA RUNOFF(CFS) =   37.44
  EFFECTIVE AREA(ACRES) =    153.07   AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.63
  TOTAL AREA(ACRES) =    153.07       PEAK FLOW RATE(CFS) =     188.33

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR021311.0 TO NODE LR021312.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1356.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1310.00
  FLOW LENGTH(FEET) =  1393.37   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  51.0 INCH PIPE IS  28.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  22.72
  PIPE-FLOW(CFS) =    188.33
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.02    Tc(MIN.) =  21.40
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21312.00 =  8483.21 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021312.0 TO NODE LR021312.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.40
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.782
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       77.43      0.75      0.60    56
  SCHOOL                     B        5.45      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   82.88      SUBAREA RUNOFF(CFS) =   99.45
  EFFECTIVE AREA(ACRES) =    235.95   AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =    235.95       PEAK FLOW RATE(CFS) =     280.47

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

****************************************************************************
  FLOW PROCESS FROM NODE LR021312.0 TO NODE LR021313.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1310.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1285.00
  FLOW LENGTH(FEET) =   759.92   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  33.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  25.08
  PIPE-FLOW(CFS) =    280.47
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.50    Tc(MIN.) =  21.90
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21313.00 =  9243.13 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR021313.0 TO NODE LR021313.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.90
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.757
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       10.40      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   10.40      SUBAREA RUNOFF(CFS) =   12.25
  EFFECTIVE AREA(ACRES) =    246.35   AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =    246.35       PEAK FLOW RATE(CFS) =     287.45

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

****************************************************************************
  FLOW PROCESS FROM NODE LR021313.0 TO NODE LR021360.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1285.00  DOWNSTREAM(FEET) =  1255.00
  FLOW LENGTH(FEET) =  1079.23   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   6.00   GIVEN BOX HEIGHT(FEET) =   5.00
  FLOWDEPTH IN BOX IS  2.28 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  21.03
  BOX-FLOW(CFS) =    287.45
  BOX-FLOW TRAVEL TIME(MIN.) =   0.86    Tc(MIN.) =  22.76
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21360.00 = 10322.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021360.0 TO NODE LR021360.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  22.76
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.717
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.55      0.75      0.60    56
  MOBILE HOME PARK           B        1.01      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.54
  SUBAREA AREA(ACRES) =    5.56      SUBAREA RUNOFF(CFS) =    6.59
  EFFECTIVE AREA(ACRES) =    251.91   AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.61
  TOTAL AREA(ACRES) =    251.91       PEAK FLOW RATE(CFS) =     287.45
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
```

```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

****************************************************************************
  FLOW PROCESS FROM NODE LR021360.0 TO NODE LR021360.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021320.0 TO NODE LR021321.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   911.31
  ELEVATION DATA: UPSTREAM(FEET) =   1510.00  DOWNSTREAM(FEET) =   1450.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.841
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.680
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        7.00      0.75      0.60    56   10.84
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     14.06
  TOTAL AREA(ACRES) =      7.00   PEAK FLOW RATE(CFS) =     14.06

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

****************************************************************************
  FLOW PROCESS FROM NODE LR021321.0 TO NODE LR021322.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1450.00  DOWNSTREAM(FEET) =   1420.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   725.48   CHANNEL SLOPE =  0.0414
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     14.06
  FLOW VELOCITY(FEET/SEC.) =   2.15   FLOW DEPTH(FEET) =   0.36
  TRAVEL TIME(MIN.) =   5.62   Tc(MIN.) =  16.46
  LONGEST FLOWPATH FROM NODE  21320.00 TO NODE  21322.00 =  1636.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021322.0 TO NODE LR021322.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  16.46
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.086
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```



```
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        9.15      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =     9.15      SUBAREA RUNOFF(CFS) =   13.48
  EFFECTIVE AREA(ACRES) =     16.15   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     16.15       PEAK FLOW RATE(CFS) =      23.80

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

****************************************************************************
  FLOW PROCESS FROM NODE LR021322.0 TO NODE LR021332.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1420.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1355.00
  FLOW LENGTH(FEET) =  1402.23   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  36.0 INCH PIPE IS   9.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.03
  PIPE-FLOW(CFS) =     23.80
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.55    Tc(MIN.) =  18.01
  LONGEST FLOWPATH FROM NODE  21320.00 TO NODE  21332.00 =  3039.02 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021332.0 TO NODE LR021332.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  18.01
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.976
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        9.34      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =     9.34      SUBAREA RUNOFF(CFS) =   12.84
  EFFECTIVE AREA(ACRES) =     25.49   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     25.49       PEAK FLOW RATE(CFS) =      35.04

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

****************************************************************************
  FLOW PROCESS FROM NODE LR021332.0 TO NODE LR021332.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
```

```
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  18.01
  RAINFALL INTENSITY(INCH/HR) =   1.98
  AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.60
  EFFECTIVE STREAM AREA(ACRES) =    25.49
  TOTAL STREAM AREA(ACRES) =    25.49
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     35.04

****************************************************************************
  FLOW PROCESS FROM NODE LR021330.0 TO NODE LR021331.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   870.87
  ELEVATION DATA: UPSTREAM(FEET) =   1440.00  DOWNSTREAM(FEET) =   1425.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.920
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.307
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        9.67      0.75      0.60    56   13.92
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     16.17
  TOTAL AREA(ACRES) =      9.67   PEAK FLOW RATE(CFS) =     16.17

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

****************************************************************************
  FLOW PROCESS FROM NODE LR021331.0 TO NODE LR021332.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1425.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1355.00
  FLOW LENGTH(FEET) =  1286.35   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  36.0 INCH PIPE IS   7.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.23
  PIPE-FLOW(CFS) =     16.17
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.60    Tc(MIN.) =  15.52
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.161
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       22.89      0.75      0.60    56
```



```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   22.89      SUBAREA RUNOFF(CFS) =   35.28
  EFFECTIVE AREA(ACRES) =     32.56    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     32.56        PEAK FLOW RATE(CFS) =     50.18

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  6.0       STREET HALFWIDTH(FEET) = 18.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.66
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   34.01
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.46
    HALFSTREET FLOOD WIDTH(FEET) =   16.63
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.90
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.71
  LONGEST FLOWPATH FROM NODE  21330.00 TO NODE  21332.00 =  2157.22 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021332.0 TO NODE LR021332.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.52
  RAINFALL INTENSITY(INCH/HR) =   2.16
  AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.60
  EFFECTIVE STREAM AREA(ACRES) =    32.56
  TOTAL STREAM AREA(ACRES) =    32.56
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     50.18

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     35.04  18.01    1.976  0.75( 0.45) 0.60    25.5 LR021320.0
      2     50.18  15.52    2.161  0.75( 0.45) 0.60    32.6 LR021330.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
```

```
     1     84.02  15.52    2.161  0.75( 0.45) 0.60    54.5 LR021330.0
     2     79.79  18.01    1.976  0.75( 0.45) 0.60    58.0 LR021320.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     84.02    Tc(MIN.) =    15.52
  EFFECTIVE AREA(ACRES) =    54.51   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     58.05
  LONGEST FLOWPATH FROM NODE  21320.00 TO NODE  21332.00 =  3039.02 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021332.0 TO NODE LR021355.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1355.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1325.00
  FLOW LENGTH(FEET) =   766.86   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  20.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.78
  PIPE-FLOW(CFS) =     84.02
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.65    Tc(MIN.) =  16.16
  LONGEST FLOWPATH FROM NODE  21320.00 TO NODE  21355.00 =  3805.88 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021355.0 TO NODE LR021355.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  16.16
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.109
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       14.76      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   14.76      SUBAREA RUNOFF(CFS) =   22.05
  EFFECTIVE AREA(ACRES) =     69.27   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     72.81       PEAK FLOW RATE(CFS) =     103.51

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

****************************************************************************
  FLOW PROCESS FROM NODE LR021355.0 TO NODE LR021355.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021340.0 TO NODE LR021341.0 IS CODE =  21
```



```
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   528.12
  ELEVATION DATA: UPSTREAM(FEET) =   1610.00  DOWNSTREAM(FEET) =   1530.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.378
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.376
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.56      0.75      0.60    56    7.38
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        3.79      0.75      0.70    56    7.84
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA RUNOFF(CFS) =     11.21
  TOTAL AREA(ACRES) =      4.35   PEAK FLOW RATE(CFS) =     11.21

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

****************************************************************************
  FLOW PROCESS FROM NODE LR021341.0 TO NODE LR021342.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1530.00  DOWNSTREAM ELEVATION(FEET) = 1490.00
  STREET LENGTH(FEET) =   644.80   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.66

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      28.77
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.43
    HALFSTREET FLOOD WIDTH(FEET) =   15.23
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.90
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.54
  STREET FLOW TRAVEL TIME(MIN.) =   1.82   Tc(MIN.) =   9.20
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.958
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       10.28      0.75      0.60    56
```

```
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.38      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
  SUBAREA AREA(ACRES) =   15.66      SUBAREA RUNOFF(CFS) =   35.00
  EFFECTIVE AREA(ACRES) =     20.01    AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.65
  TOTAL AREA(ACRES) =     20.01        PEAK FLOW RATE(CFS) =      44.57

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.49   HALFSTREET FLOOD WIDTH(FEET) =  18.00
  FLOW VELOCITY(FEET/SEC.) =  6.61   DEPTH*VELOCITY(FT*FT/SEC.) =   3.22
  LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21342.00 =  1172.92 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021342.0 TO NODE LR021343.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1490.00  DOWNSTREAM ELEVATION(FEET) = 1425.00
  STREET LENGTH(FEET) =  1308.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      86.61
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.60
    HALFSTREET FLOOD WIDTH(FEET) =   22.78
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.80
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.64
  STREET FLOW TRAVEL TIME(MIN.) =   2.80   Tc(MIN.) =  11.99
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.522
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       12.19      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       33.88      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA AREA(ACRES) =   46.07      SUBAREA RUNOFF(CFS) =   83.70
  EFFECTIVE AREA(ACRES) =     66.08    AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.67
```



```
  TOTAL AREA(ACRES) =     66.08        PEAK FLOW RATE(CFS) =     120.42

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.66   HALFSTREET FLOOD WIDTH(FEET) =  25.83
  FLOW VELOCITY(FEET/SEC.) =  8.56   DEPTH*VELOCITY(FT*FT/SEC.) =   5.62
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1308.0 FT WITH ELEVATION-DROP =  65.0 FT, IS   77.6 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21343.00
  LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21343.00 =  2480.92 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021343.0 TO NODE LR021354.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1425.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1380.00
  FLOW LENGTH(FEET) =  1461.18   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  24.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.82
  PIPE-FLOW(CFS) =    120.42
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.23    Tc(MIN.) =  13.22
  LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21354.00 =  3942.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021354.0 TO NODE LR021354.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  13.22
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.379
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       23.13      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   23.13      SUBAREA RUNOFF(CFS) =   40.18
  EFFECTIVE AREA(ACRES) =     89.21   AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.65
  TOTAL AREA(ACRES) =     89.21       PEAK FLOW RATE(CFS) =     152.08

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

****************************************************************************
  FLOW PROCESS FROM NODE LR021354.0 TO NODE LR021354.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
```

```
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  13.22
  RAINFALL INTENSITY(INCH/HR) =   2.38
  AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.65
  EFFECTIVE STREAM AREA(ACRES) =    89.21
  TOTAL STREAM AREA(ACRES) =    89.21
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    152.08

****************************************************************************
  FLOW PROCESS FROM NODE LR021350.0 TO NODE LR021351.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   820.03
  ELEVATION DATA: UPSTREAM(FEET) =   1555.00  DOWNSTREAM(FEET) =   1510.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.778
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.689
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.46      0.75      0.70    56   11.46
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.41      0.75      0.60    56   10.78
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA RUNOFF(CFS) =      9.52
  TOTAL AREA(ACRES) =      4.87   PEAK FLOW RATE(CFS) =      9.52

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

****************************************************************************
  FLOW PROCESS FROM NODE LR021351.0 TO NODE LR021352.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1510.00  DOWNSTREAM(FEET) =   1480.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   236.29   CHANNEL SLOPE =  0.1270
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      9.52
  FLOW VELOCITY(FEET/SEC.) =   2.94   FLOW DEPTH(FEET) =   0.25
  TRAVEL TIME(MIN.) =   1.34   Tc(MIN.) =  12.12
  LONGEST FLOWPATH FROM NODE  21350.00 TO NODE  21352.00 =  1056.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021352.0 TO NODE LR021352.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```



```
  MAINLINE Tc(MIN) =  12.12
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.507
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.96      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.22      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =     2.18      SUBAREA RUNOFF(CFS) =     3.91
  EFFECTIVE AREA(ACRES) =      7.05   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =      7.05       PEAK FLOW RATE(CFS) =      12.62

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

****************************************************************************
  FLOW PROCESS FROM NODE LR021352.0 TO NODE LR021352.5 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1480.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1460.00
  FLOW LENGTH(FEET) =   207.56   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  45.0 INCH PIPE IS   5.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.74
  PIPE-FLOW(CFS) =     12.62
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =  12.34
  LONGEST FLOWPATH FROM NODE  21350.00 TO NODE  21352.50 =  1263.88 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021352.5 TO NODE LR021352.5 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  12.34
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.480
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.89      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.98      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =     7.87      SUBAREA RUNOFF(CFS) =    13.91
  EFFECTIVE AREA(ACRES) =     14.92   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     14.92       PEAK FLOW RATE(CFS) =      26.37
```

```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

****************************************************************************
  FLOW PROCESS FROM NODE LR021352.5 TO NODE LR021353.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1460.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1450.00
  FLOW LENGTH(FEET) =   277.00   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  10.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.85
  PIPE-FLOW(CFS) =     26.37
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.33    Tc(MIN.) =  12.67
  LONGEST FLOWPATH FROM NODE  21350.00 TO NODE  21353.00 =  1540.88 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021353.0 TO NODE LR021353.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  12.67
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.440
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.59      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        7.66      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    9.25      SUBAREA RUNOFF(CFS) =   16.06
  EFFECTIVE AREA(ACRES) =     24.17   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     24.17       PEAK FLOW RATE(CFS) =      41.90

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

****************************************************************************
  FLOW PROCESS FROM NODE LR021353.0 TO NODE LR021354.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1450.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1380.00
  FLOW LENGTH(FEET) =  2039.85   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  13.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.54
```



```
  PIPE-FLOW(CFS) =     41.90
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   2.19    Tc(MIN.) =  14.86
  LONGEST FLOWPATH FROM NODE  21350.00 TO NODE  21354.00 =  3580.73 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021354.0 TO NODE LR021354.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  14.86
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.218
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       33.72      0.75      0.60    56
  COMMERCIAL                 B        0.32      0.75      0.10    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.48      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   35.52      SUBAREA RUNOFF(CFS) =   56.56
  EFFECTIVE AREA(ACRES) =     59.69   AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.64
  TOTAL AREA(ACRES) =     59.69       PEAK FLOW RATE(CFS) =      93.63

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

****************************************************************************
  FLOW PROCESS FROM NODE LR021354.0 TO NODE LR021354.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  14.86
  RAINFALL INTENSITY(INCH/HR) =   2.22
  AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.64
  EFFECTIVE STREAM AREA(ACRES) =    59.69
  TOTAL STREAM AREA(ACRES) =    59.69
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     93.63

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    152.08  13.22    2.379  0.75( 0.48) 0.65    89.2 LR021340.0
      2     93.63  14.86    2.218  0.75( 0.48) 0.64    59.7 LR021350.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
```

```
 NUMBER   (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)        (ACRES)    NODE
    1    243.08  13.22     2.379  0.75( 0.48) 0.64   142.3 LR021340.0
    2    232.77  14.86     2.218  0.75( 0.48) 0.64   148.9 LR021350.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    243.08    Tc(MIN.) =    13.22
  EFFECTIVE AREA(ACRES) =   142.32   AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.64
  TOTAL AREA(ACRES) =    148.90
  LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21354.00 =  3942.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021354.0 TO NODE LR021355.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1380.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1325.00
  FLOW LENGTH(FEET) =  1308.82   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  30.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  26.52
  PIPE-FLOW(CFS) =    243.08
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.82    Tc(MIN.) =  14.04
  LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21355.00 =  5250.92 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021355.0 TO NODE LR021355.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  14.04
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.294
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        6.86      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    6.86      SUBAREA RUNOFF(CFS) =   11.39
  EFFECTIVE AREA(ACRES) =    149.18   AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.64
  TOTAL AREA(ACRES) =    155.76       PEAK FLOW RATE(CFS) =     243.64

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

****************************************************************************
  FLOW PROCESS FROM NODE LR021355.0 TO NODE LR021355.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
```



```
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
 NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
    1    243.08  14.10    2.289  0.75( 0.48) 0.64   149.2 LR021340.0
    2    233.09  15.74    2.142  0.75( 0.48) 0.64   155.8 LR021350.0
  LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21355.00 =  5250.92 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
 NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
    1    103.30  16.20    2.106  0.75( 0.45) 0.60    69.3 LR021330.0
    2     97.16  18.71    1.932  0.75( 0.45) 0.60    72.8 LR021320.0
  LONGEST FLOWPATH FROM NODE  21320.00 TO NODE  21355.00 =  3805.88 FEET.

  ** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
 NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
    1    342.90  14.10    2.289  0.75( 0.47) 0.63   209.4 LR021340.0
    2    335.68  15.74    2.142  0.75( 0.47) 0.63   223.1 LR021350.0
    3    331.26  16.20    2.106  0.75( 0.47) 0.63   225.0 LR021330.0
    4    300.72  18.71    1.932  0.75( 0.47) 0.63   228.6 LR021320.0
  TOTAL AREA(ACRES) =    228.57

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      342.90  Tc(MIN.) =   14.097
  EFFECTIVE AREA(ACRES) =    209.44  AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.63
  TOTAL AREA(ACRES) =    228.57
  LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21355.00 =  5250.92 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021355.0 TO NODE LR021355.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021355.0 TO NODE LR021356.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1325.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1315.00
  FLOW LENGTH(FEET) =   763.37   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  75.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  75.0 INCH PIPE IS  43.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.65
  PIPE-FLOW(CFS) =    342.90
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.68    Tc(MIN.) =  14.78
  LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21356.00 =  6014.29 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021356.0 TO NODE LR021356.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```

```
  MAINLINE Tc(MIN) =  14.78
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.225
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        4.42      0.75       0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    4.42      SUBAREA RUNOFF(CFS) =    7.07
  EFFECTIVE AREA(ACRES) =    213.86   AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.63
  TOTAL AREA(ACRES) =    232.99       PEAK FLOW RATE(CFS) =     342.90
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

****************************************************************************
  FLOW PROCESS FROM NODE LR021356.0 TO NODE LR021357.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1315.00  DOWNSTREAM(FEET) =   1296.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   552.93   CHANNEL SLOPE =  0.0344
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   4.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    342.90
  FLOW VELOCITY(FEET/SEC.) =  11.01   FLOW DEPTH(FEET) =   2.42
  TRAVEL TIME(MIN.) =   0.84   Tc(MIN.) =  15.62
  LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21357.00 =  6567.22 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021357.0 TO NODE LR021357.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  15.62
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.153
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B       38.32      0.75       0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   38.32      SUBAREA RUNOFF(CFS) =   58.77
  EFFECTIVE AREA(ACRES) =    252.18   AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =    271.31       PEAK FLOW RATE(CFS) =     382.62

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

****************************************************************************
  FLOW PROCESS FROM NODE LR021357.0 TO NODE LR021358.0 IS CODE =  54
----------------------------------------------------------------------------
```



```
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1296.00  DOWNSTREAM(FEET) =   1285.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   511.89   CHANNEL SLOPE =  0.0215
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   4.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    382.62
  FLOW VELOCITY(FEET/SEC.) =   9.58   FLOW DEPTH(FEET) =   2.90
  TRAVEL TIME(MIN.) =   0.89   Tc(MIN.) =  16.51
  LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21358.00 =  7079.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021358.0 TO NODE LR021358.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  16.51
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.082
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        7.40      0.75       0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    7.40      SUBAREA RUNOFF(CFS) =   10.88
  EFFECTIVE AREA(ACRES) =    259.58   AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =    278.71       PEAK FLOW RATE(CFS) =     382.62
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

****************************************************************************
  FLOW PROCESS FROM NODE LR021358.0 TO NODE LR021359.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1285.00  DOWNSTREAM(FEET) =   1267.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   575.39   CHANNEL SLOPE =  0.0313
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   4.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    382.62
  FLOW VELOCITY(FEET/SEC.) =  10.98   FLOW DEPTH(FEET) =   2.63
  TRAVEL TIME(MIN.) =   0.87   Tc(MIN.) =  17.38
  LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21359.00 =  7654.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021359.0 TO NODE LR021359.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.38
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.019
  SUBAREA LOSS RATE DATA(AMC  II):
```

```
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        4.95      0.75       0.60    56
  COMMERCIAL                  B        2.16      0.75       0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.45
  SUBAREA AREA(ACRES) =    7.11      SUBAREA RUNOFF(CFS) =   10.77
  EFFECTIVE AREA(ACRES) =    266.69   AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =    285.82       PEAK FLOW RATE(CFS) =     382.62
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

****************************************************************************
  FLOW PROCESS FROM NODE LR021359.0 TO NODE LR021360.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1267.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1255.00
  FLOW LENGTH(FEET) =   711.66   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  78.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  78.0 INCH PIPE IS  41.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  21.11
  PIPE-FLOW(CFS) =    382.62
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.56    Tc(MIN.) =  17.94
  LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21360.00 =  8366.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021360.0 TO NODE LR021360.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.94
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.981
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        3.67      0.75       0.60    56
  MOBILE HOME PARK            B        0.92      0.75       0.25    56
  COMMERCIAL                  B        0.01      0.75       0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.53
  SUBAREA AREA(ACRES) =    4.60      SUBAREA RUNOFF(CFS) =    6.56
  EFFECTIVE AREA(ACRES) =    271.29   AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =    290.42       PEAK FLOW RATE(CFS) =     382.62
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR021360.0 TO NODE LR021360.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    381.78  18.03    1.975  0.75( 0.46) 0.62   271.3 LR021340.0
      2    372.37  19.70    1.873  0.75( 0.46) 0.62   284.9 LR021350.0
      3    367.46  20.17    1.846  0.75( 0.46) 0.62   286.9 LR021330.0
      4    334.87  22.78    1.717  0.75( 0.46) 0.62   290.4 LR021320.0
  LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21360.00 =  8366.16 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    287.45  22.76    1.717  0.75( 0.46) 0.61   251.9 LR021300.0
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21360.00 = 10322.36 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    656.12  18.03    1.975  0.75( 0.46) 0.62   470.8 LR021340.0
      2    651.91  19.70    1.873  0.75( 0.46) 0.62   502.9 LR021350.0
      3    648.36  20.17    1.846  0.75( 0.46) 0.62   510.2 LR021330.0
      4    622.53  22.76    1.717  0.75( 0.46) 0.62   542.3 LR021300.0
      5    622.15  22.78    1.717  0.75( 0.46) 0.62   542.3 LR021320.0
    TOTAL AREA(ACRES) =    542.33

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      656.12  Tc(MIN.) =   18.025
  EFFECTIVE AREA(ACRES) =    470.80  AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =    542.33
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21360.00 = 10322.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021360.0 TO NODE LR021360.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021360.0 TO NODE LR021361.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1255.00  DOWNSTREAM(FEET) =   1240.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   770.40   CHANNEL SLOPE =  0.0195
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   6.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    656.12
  FLOW VELOCITY(FEET/SEC.) =  10.40   FLOW DEPTH(FEET) =   3.37
  TRAVEL TIME(MIN.) =   1.23   Tc(MIN.) =  19.26
```

```
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21361.00 = 11092.76 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021361.0 TO NODE LR021361.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  19.26
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.898
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       11.84      0.75      0.60    56
  MOBILE HOME PARK           B        3.43      0.75      0.25    56
  COMMERCIAL                 B        1.54      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.48
  SUBAREA AREA(ACRES) =   16.81      SUBAREA RUNOFF(CFS) =   23.26
  EFFECTIVE AREA(ACRES) =    487.61   AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.61
  TOTAL AREA(ACRES) =    559.14       PEAK FLOW RATE(CFS) =     656.12
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

****************************************************************************
  FLOW PROCESS FROM NODE LR021361.0 TO NODE LR021361.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021248.0 TO NODE LR021248.0 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 21248.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1234.42    Tc(MIN.) =  31.80
  AREA-AVERAGED Fm(INCH/HR) =  0.46    Ybar = 0.54
  TOTAL AREA(ACRES) =    1340.40
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21248.00 = 15575.76 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021248.0 TO NODE LR021248.0 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1234.42    Tc(MIN.) =  31.80
  AREA-AVERAGED Fm(INCH/HR) =  0.46    Ybar = 0.54
  TOTAL AREA(ACRES) =    1340.40
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21248.00 = 15575.76 FEET.

****************************************************************************
```



```
  FLOW PROCESS FROM NODE LR021248.0 TO NODE LR021248.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021248.0 TO NODE LR021361.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1280.00  DOWNSTREAM(FEET) =   1240.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1507.42   CHANNEL SLOPE =  0.0265
  CHANNEL BASE(FEET) =    9.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   1234.42
  FLOW VELOCITY(FEET/SEC.) =  26.17   FLOW DEPTH(FEET) =   3.10
  TRAVEL TIME(MIN.) =   0.96   Tc(MIN.) =  32.76
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21361.00 = 17083.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021361.0 TO NODE LR021361.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  32.76
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.380
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       42.57      0.75      0.60    56
  MOBILE HOME PARK           B       41.35      0.75      0.25    56
  COMMERCIAL                 B       17.40      0.75      0.10    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        0.33      0.63      1.00    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.37
  SUBAREA AREA(ACRES) =  101.65
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.56;6H= 2.11;24H= 4.24
  S-GRAPH: VALLEY(DEV.)= 94.5%;VALLEY(UNDEV.)/DESERT=  5.5%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.55; LAG(HR) = 0.44; Fm(INCH/HR) = 0.45; Ybar = 0.53
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.94; 30M = 0.94; 1HR = 0.94;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1442.05
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21361.00 = 17083.18 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0321; Lca/L=0.4,n=.0288; Lca/L=0.5,n=.0264;Lca/L=0.6,n=.0246
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     258.52
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1313.02
  TOTAL AREA(ACRES) =   1442.05       PEAK FLOW RATE(CFS) =    1313.02

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR021361.0 TO NODE LR021361.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     1313.02    Tc(MIN.) =  32.76
  AREA-AVERAGED Fm(INCH/HR) =  0.45    Ybar = 0.53
  TOTAL AREA(ACRES) =    1442.05
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21361.00 = 17083.18 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    656.12  19.26    1.898  0.75( 0.46) 0.61   487.6 LR021340.0
      2    651.91  20.93    1.806  0.75( 0.46) 0.61   519.7 LR021350.0
      3    648.36  21.41    1.781  0.75( 0.46) 0.61   527.0 LR021330.0
      4    622.53  24.01    1.663  0.75( 0.46) 0.61   559.1 LR021300.0
      5    622.15  24.03    1.662  0.75( 0.46) 0.61   559.1 LR021320.0
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21361.00 = 11092.76 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.55;6H= 2.09;24H= 4.17
  S-GRAPH: VALLEY(DEV.)= 96.0%;VALLEY(UNDEV.)/DESERT=  4.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.55; LAG(HR) = 0.44; Fm(INCH/HR) = 0.45; Ybar = 0.53
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.91; 30M = 0.91; 1HR = 0.91;
  3HR = 0.99; 6HR = 0.99; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   2001.19
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21361.00 = 17083.18 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0321; Lca/L=0.4,n=.0288; Lca/L=0.5,n=.0264;Lca/L=0.6,n=.0246
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     348.62
  PEAK FLOW RATE(CFS) =    1764.73

****************************************************************************
  FLOW PROCESS FROM NODE LR021361.0 TO NODE LR021361.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021361.0 TO NODE LR021378.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1240.00  DOWNSTREAM(FEET) =   1235.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   988.61   CHANNEL SLOPE =  0.0051
  CHANNEL BASE(FEET) =   13.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   6.50
  CHANNEL FLOW THRU SUBAREA(CFS) =   1764.73
  FLOW VELOCITY(FEET/SEC.) =  15.44   FLOW DEPTH(FEET) =   4.98
  TRAVEL TIME(MIN.) =   1.07   Tc(MIN.) =  33.82
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21378.00 = 18071.79 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR021378.0 TO NODE LR021378.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  33.82
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.354
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.75      0.75       0.60    56
  COMMERCIAL                 B       11.57      0.75       0.10    56
  MOBILE HOME PARK           B       12.66      0.75       0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.25
  SUBAREA AREA(ACRES) =   28.98
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.55;6H= 2.09;24H= 4.17
  S-GRAPH: VALLEY(DEV.)= 96.1%;VALLEY(UNDEV.)/DESERT=  3.9%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.56; LAG(HR) = 0.45; Fm(INCH/HR) = 0.45; Ybar = 0.53
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.91; 30M = 0.91; 1HR = 0.91;
  3HR = 0.99; 6HR = 0.99; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   2030.17
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21378.00 = 18071.79 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0314; Lca/L=0.4,n=.0282; Lca/L=0.5,n=.0259;Lca/L=0.6,n=.0242
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     355.96
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1756.25
  TOTAL AREA(ACRES) =   2030.17       PEAK FLOW RATE(CFS) =    1764.73
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

****************************************************************************
  FLOW PROCESS FROM NODE LR021378.0 TO NODE LR021378.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =    1764.73    Tc(MIN.) =  33.82
  AREA-AVERAGED Fm(INCH/HR) =  0.45   Ybar = 0.53
  TOTAL AREA(ACRES) =    2030.17

****************************************************************************
  FLOW PROCESS FROM NODE LR021370.0 TO NODE LR021371.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   627.80
  ELEVATION DATA: UPSTREAM(FEET) =   1415.00  DOWNSTREAM(FEET) =   1390.00
```

```
  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.620
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.311
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.63      0.75       0.60     56   10.33
  COMMERCIAL                 B        3.67      0.75       0.10     56    7.62
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.35
  SUBAREA RUNOFF(CFS) =     20.04
  TOTAL AREA(ACRES) =      7.30   PEAK FLOW RATE(CFS) =     20.04

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

****************************************************************************
  FLOW PROCESS FROM NODE LR021371.0 TO NODE LR021372.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1390.00  DOWNSTREAM ELEVATION(FEET) = 1380.00
  STREET LENGTH(FEET) =   602.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      26.28
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.50
    HALFSTREET FLOOD WIDTH(FEET) =   18.14
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.60
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.81
  STREET FLOW TRAVEL TIME(MIN.) =   2.79   Tc(MIN.) =  10.41
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.745
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.99      0.75       0.60     56
  COMMERCIAL                 B        0.01      0.75       0.10     56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    6.00      SUBAREA RUNOFF(CFS) =   12.40
  EFFECTIVE AREA(ACRES) =     13.30    AREA-AVERAGED Fm(INCH/HR) =  0.35
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.46
  TOTAL AREA(ACRES) =     13.30        PEAK FLOW RATE(CFS) =      28.73
```



```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.51   HALFSTREET FLOOD WIDTH(FEET) =  18.69
  FLOW VELOCITY(FEET/SEC.) =  3.72   DEPTH*VELOCITY(FT*FT/SEC.) =   1.91
  LONGEST FLOWPATH FROM NODE  21370.00 TO NODE  21372.00 =  1230.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021372.0 TO NODE LR021373.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1380.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1365.00
  FLOW LENGTH(FEET) =   527.76   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  12.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.30
  PIPE-FLOW(CFS) =     28.73
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.70    Tc(MIN.) =  11.11
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.640
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.16      0.75       0.60     56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    5.16      SUBAREA RUNOFF(CFS) =   10.18
  EFFECTIVE AREA(ACRES) =     18.46    AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =     18.46        PEAK FLOW RATE(CFS) =     37.65

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  6.0       STREET HALFWIDTH(FEET) = 18.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =    8.92
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.35
    HALFSTREET FLOOD WIDTH(FEET) =   11.09
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.31
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.15
```

```
  LONGEST FLOWPATH FROM NODE  21370.00 TO NODE  21373.00 =  1758.06 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021373.0 TO NODE LR021374.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1365.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1345.00
  FLOW LENGTH(FEET) =   326.48   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  11.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.92
  PIPE-FLOW(CFS) =     37.65
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.30    Tc(MIN.) =  11.42
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.598
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.94      0.75      0.60    56
  COMMERCIAL                 B        0.17      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.58
  SUBAREA AREA(ACRES) =    5.11      SUBAREA RUNOFF(CFS) =    9.94
  EFFECTIVE AREA(ACRES) =     23.57    AREA-AVERAGED Fm(INCH/HR) =  0.39
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.52
  TOTAL AREA(ACRES) =     23.57        PEAK FLOW RATE(CFS) =     46.88

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  6.0       STREET HALFWIDTH(FEET) = 18.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.64
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =    9.23
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.32
    HALFSTREET FLOOD WIDTH(FEET) =    9.52
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.50
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.43
  LONGEST FLOWPATH FROM NODE  21370.00 TO NODE  21374.00 =  2084.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021374.0 TO NODE LR021375.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```



```
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1345.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1330.00
  FLOW LENGTH(FEET) =   319.60   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  14.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.26
  PIPE-FLOW(CFS) =     46.88
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.29    Tc(MIN.) =  11.71
  LONGEST FLOWPATH FROM NODE  21370.00 TO NODE  21375.00 =  2404.14 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021375.0 TO NODE LR021375.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  11.71
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.559
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       10.88      0.75      0.60    56
  COMMERCIAL                 B       14.84      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.31
  SUBAREA AREA(ACRES) =   25.72      SUBAREA RUNOFF(CFS) =   53.83
  EFFECTIVE AREA(ACRES) =     49.29   AREA-AVERAGED Fm(INCH/HR) =  0.31
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.41
  TOTAL AREA(ACRES) =     49.29       PEAK FLOW RATE(CFS) =      99.88

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

****************************************************************************
  FLOW PROCESS FROM NODE LR021375.0 TO NODE LR021376.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1330.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1275.00
  FLOW LENGTH(FEET) =  1914.40   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  23.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.42
  PIPE-FLOW(CFS) =     99.88
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.73    Tc(MIN.) =  13.44
  LONGEST FLOWPATH FROM NODE  21370.00 TO NODE  21376.00 =  4318.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021376.0 TO NODE LR021376.0 IS CODE =  81
----------------------------------------------------------------------------
```

```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN) =  13.44
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.355
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       33.59      0.75      0.60    56
  MOBILE HOME PARK           B        3.65      0.75      0.25    56
  COMMERCIAL                 B        1.26      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.55
  SUBAREA AREA(ACRES) =   38.50      SUBAREA RUNOFF(CFS) =   67.35
  EFFECTIVE AREA(ACRES) =     87.79   AREA-AVERAGED Fm(INCH/HR) =  0.35
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.47
  TOTAL AREA(ACRES) =     87.79       PEAK FLOW RATE(CFS) =     158.21

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

********************************************************************************
  FLOW PROCESS FROM NODE LR021376.0 TO NODE LR021377.0 IS CODE =  42
--------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
================================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1275.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1257.00
  FLOW LENGTH(FEET) =   629.69   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  28.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.59
  PIPE-FLOW(CFS) =    158.21
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.51    Tc(MIN.) =  13.95
  LONGEST FLOWPATH FROM NODE  21370.00 TO NODE  21377.00 =  4948.23 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE LR021377.0 TO NODE LR021377.0 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN) =  13.95
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.303
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B       12.70      0.75      0.25    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.69      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.34
  SUBAREA AREA(ACRES) =   17.39      SUBAREA RUNOFF(CFS) =   32.02
  EFFECTIVE AREA(ACRES) =    105.18   AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.45
  TOTAL AREA(ACRES) =    105.18       PEAK FLOW RATE(CFS) =     186.12
```



```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

********************************************************************************
  FLOW PROCESS FROM NODE LR021377.0 TO NODE LR021378.0 IS CODE =  42
--------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
================================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1257.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1235.00
  FLOW LENGTH(FEET) =  1320.25   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  57.0 INCH PIPE IS  33.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.52
  PIPE-FLOW(CFS) =    186.12
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.26    Tc(MIN.) =  15.21
  LONGEST FLOWPATH FROM NODE  21370.00 TO NODE  21378.00 =  6268.48 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE LR021378.0 TO NODE LR021378.0 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN) =  15.21
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.187
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B       17.63      0.75      0.25    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.65      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.26
  SUBAREA AREA(ACRES) =   18.28      SUBAREA RUNOFF(CFS) =   32.75
  EFFECTIVE AREA(ACRES) =    123.46   AREA-AVERAGED Fm(INCH/HR) =  0.32
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.42
  TOTAL AREA(ACRES) =    123.46       PEAK FLOW RATE(CFS) =     207.89

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.73; 1HR = 0.96; 3HR = 1.52; 6HR = 2.04; 24HR = 4.00

********************************************************************************
  FLOW PROCESS FROM NODE LR021378.0 TO NODE LR021378.0 IS CODE =   1
--------------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.21
  RAINFALL INTENSITY(INCH/HR) =   2.19
  AREA-AVERAGED Fm(INCH/HR) =  0.32
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.42
```

```
  EFFECTIVE STREAM AREA(ACRES) =   123.46
  TOTAL STREAM AREA(ACRES) =   123.46
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    207.89
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1      1764.73   33.82     2030.17  LR021100.0
     2       207.89   15.21      123.46  LR021370.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.54;6H= 2.09;24H= 4.16
  S-GRAPH: VALLEY(DEV.)= 96.3%;VALLEY(UNDEV.)/DESERT=  3.7%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.56; LAG(HR) = 0.45; Fm(INCH/HR) = 0.44; Ybar = 0.52
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.90; 30M = 0.90; 1HR = 0.90;
  3HR = 0.99; 6HR = 0.99; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   2153.63
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21378.00 = 18071.79 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0314; Lca/L=0.4,n=.0282; Lca/L=0.5,n=.0259;Lca/L=0.6,n=.0242
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     381.68
  PEAK FLOW RATE(CFS) =   1862.23

****************************************************************************
  FLOW PROCESS FROM NODE LR021378.0 TO NODE LR021378.0 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 21378.DNA
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =   2153.63  TC(MIN.) =     33.82
  AREA-AVERAGED Fm(INCH/HR)=  0.44   Ybar =  0.52
  PEAK FLOW RATE(CFS)   =   1862.23
============================================================================
============================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                          San Bernardino County
                    Transportation/ Flood Control Department

                          Water Resources Division

 ************************* DESCRIPTION OF STUDY *************************
* LR 0214ZZ FILE                                                       *
*  25-YEAR STORM                                                       *
*                                                                      *
 ************************************************************************

  FILE NAME: LR0214ZZ.Z25
  TIME/DATE OF STUDY: 11:26 02/23/2006
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 0.9700

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
```



```
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


************************************************************************
  FLOW PROCESS FROM NODE LR021400.0 TO NODE LR021401.0 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   598.36
  ELEVATION DATA: UPSTREAM(FEET) =   1380.00  DOWNSTREAM(FEET) =   1360.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.742
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.314
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        8.19      0.75       0.60    56   10.49
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        0.62      0.75       0.70    56   11.15
  COMMERCIAL                 B        0.44      0.75       0.10    56    7.74
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.58
  SUBAREA RUNOFF(CFS) =     23.96
  TOTAL AREA(ACRES) =      9.25   PEAK FLOW RATE(CFS) =     23.96

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

************************************************************************
  FLOW PROCESS FROM NODE LR021401.0 TO NODE LR021402.0 IS CODE =  54
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1360.00  DOWNSTREAM(FEET) =   1336.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   415.44   CHANNEL SLOPE =  0.0578
```

```
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     23.96
  FLOW VELOCITY(FEET/SEC.) =   3.76   FLOW DEPTH(FEET) =   0.65
  TRAVEL TIME(MIN.) =   1.84   Tc(MIN.) =   9.58
  LONGEST FLOWPATH FROM NODE  21400.00 TO NODE  21402.00 =  1013.80 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021402.0 TO NODE LR021402.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =   9.58
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.916
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.47      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    3.47      SUBAREA RUNOFF(CFS) =    7.71
  EFFECTIVE AREA(ACRES) =     12.72   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.59
  TOTAL AREA(ACRES) =     12.72       PEAK FLOW RATE(CFS) =      28.35

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

****************************************************************************
  FLOW PROCESS FROM NODE LR021402.0 TO NODE LR021403.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1336.00  DOWNSTREAM(FEET) =   1327.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   198.50   CHANNEL SLOPE =  0.0453
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     28.35
  FLOW VELOCITY(FEET/SEC.) =   3.57   FLOW DEPTH(FEET) =   0.73
  TRAVEL TIME(MIN.) =   0.93   Tc(MIN.) =  10.51
  LONGEST FLOWPATH FROM NODE  21400.00 TO NODE  21403.00 =  1212.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021403.0 TO NODE LR021403.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  10.51
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.759
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.90      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
```



```
  SUBAREA AREA(ACRES) =    3.90      SUBAREA RUNOFF(CFS) =    8.11
  EFFECTIVE AREA(ACRES) =     16.62   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.59
  TOTAL AREA(ACRES) =     16.62       PEAK FLOW RATE(CFS) =      34.66

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

****************************************************************************
  FLOW PROCESS FROM NODE LR021403.0 TO NODE LR021404.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1327.00  DOWNSTREAM(FEET) =   1310.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   389.91   CHANNEL SLOPE =  0.0436
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     34.66
  FLOW VELOCITY(FEET/SEC.) =   3.70   FLOW DEPTH(FEET) =   0.79
  TRAVEL TIME(MIN.) =   1.76   Tc(MIN.) =  12.27
  LONGEST FLOWPATH FROM NODE  21400.00 TO NODE  21404.00 =  1602.21 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021404.0 TO NODE LR021404.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  12.27
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.515
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.41      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    3.41      SUBAREA RUNOFF(CFS) =    6.34
  EFFECTIVE AREA(ACRES) =     20.03   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.59
  TOTAL AREA(ACRES) =     20.03       PEAK FLOW RATE(CFS) =      37.34

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

****************************************************************************
  FLOW PROCESS FROM NODE LR021404.0 TO NODE LR021405.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1310.00  DOWNSTREAM(FEET) =   1295.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   295.90   CHANNEL SLOPE =  0.0507
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     37.34
  FLOW VELOCITY(FEET/SEC.) =   4.00   FLOW DEPTH(FEET) =   0.79
  TRAVEL TIME(MIN.) =   1.23   Tc(MIN.) =  13.50
```

```
  LONGEST FLOWPATH FROM NODE  21400.00 TO NODE  21405.00 =  1898.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021405.0 TO NODE LR021405.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  13.50
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.374
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        8.54      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    8.54      SUBAREA RUNOFF(CFS) =   14.80
  EFFECTIVE AREA(ACRES) =     28.57   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.59
  TOTAL AREA(ACRES) =     28.57       PEAK FLOW RATE(CFS) =      49.61

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

****************************************************************************
  FLOW PROCESS FROM NODE LR021405.0 TO NODE LR021406.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1295.00  DOWNSTREAM(FEET) =   1285.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   314.00   CHANNEL SLOPE =  0.0318
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  20.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     49.61
  FLOW VELOCITY(FEET/SEC.) =   3.36   FLOW DEPTH(FEET) =   0.86
  TRAVEL TIME(MIN.) =   1.56   Tc(MIN.) =  15.06
  LONGEST FLOWPATH FROM NODE  21400.00 TO NODE  21406.00 =  2212.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021406.0 TO NODE LR021406.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  15.06
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.224
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       26.61      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   26.61      SUBAREA RUNOFF(CFS) =   42.50
  EFFECTIVE AREA(ACRES) =     55.18   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     55.18       PEAK FLOW RATE(CFS) =      88.24
```



```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

****************************************************************************
  FLOW PROCESS FROM NODE LR021406.0 TO NODE LR021417.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1285.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1250.00
  FLOW LENGTH(FEET) =  1395.25   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  25.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.73
  PIPE-FLOW(CFS) =     88.24
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.39    Tc(MIN.) =  16.45
  LONGEST FLOWPATH FROM NODE  21400.00 TO NODE  21417.00 =  3607.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021417.0 TO NODE LR021417.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  16.45
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.109
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        1.06      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.55      0.75      0.60    56
  MOBILE HOME PARK           B       12.65      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.34
  SUBAREA AREA(ACRES) =   19.26      SUBAREA RUNOFF(CFS) =   32.11
  EFFECTIVE AREA(ACRES) =     74.44   AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.53
  TOTAL AREA(ACRES) =     74.44       PEAK FLOW RATE(CFS) =     114.66

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

****************************************************************************
  FLOW PROCESS FROM NODE LR021417.0 TO NODE LR021417.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  16.45
  RAINFALL INTENSITY(INCH/HR) =   2.11
  AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.53
  EFFECTIVE STREAM AREA(ACRES) =    74.44
```

```
  TOTAL STREAM AREA(ACRES) =    74.44
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    114.66

****************************************************************************
  FLOW PROCESS FROM NODE LR021410.0 TO NODE LR021411.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   770.62
  ELEVATION DATA: UPSTREAM(FEET) =   1370.00  DOWNSTREAM(FEET) =   1345.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.679
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.589
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.87      0.75      0.60    56   11.68
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.17      0.75      0.70    56   12.42
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.62
  SUBAREA RUNOFF(CFS) =      9.63
  TOTAL AREA(ACRES) =      5.04   PEAK FLOW RATE(CFS) =      9.63

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

****************************************************************************
  FLOW PROCESS FROM NODE LR021411.0 TO NODE LR021412.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1345.00  DOWNSTREAM(FEET) =   1312.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   618.61   CHANNEL SLOPE =  0.0533
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      9.63
  FLOW VELOCITY(FEET/SEC.) =   2.13   FLOW DEPTH(FEET) =   0.30
  TRAVEL TIME(MIN.) =   4.83   Tc(MIN.) =  16.51
  LONGEST FLOWPATH FROM NODE  21410.00 TO NODE  21412.00 =  1389.23 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021412.0 TO NODE LR021412.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  16.51
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.104
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        7.50      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
```



```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    7.50      SUBAREA RUNOFF(CFS) =   11.17
  EFFECTIVE AREA(ACRES) =     12.54   AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.61
  TOTAL AREA(ACRES) =     12.54       PEAK FLOW RATE(CFS) =      18.60

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

****************************************************************************
  FLOW PROCESS FROM NODE LR021412.0 TO NODE LR021413.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1312.00  DOWNSTREAM(FEET) =   1300.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   262.39   CHANNEL SLOPE =  0.0457
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     18.60
  FLOW VELOCITY(FEET/SEC.) =   2.40   FLOW DEPTH(FEET) =   0.39
  TRAVEL TIME(MIN.) =   1.82   Tc(MIN.) =  18.33
  LONGEST FLOWPATH FROM NODE  21410.00 TO NODE  21413.00 =  1651.62 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021413.0 TO NODE LR021413.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  18.33
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.976
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.80      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    1.80      SUBAREA RUNOFF(CFS) =    2.47
  EFFECTIVE AREA(ACRES) =     14.34   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.61
  TOTAL AREA(ACRES) =     14.34       PEAK FLOW RATE(CFS) =      19.63

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

****************************************************************************
  FLOW PROCESS FROM NODE LR021413.0 TO NODE LR021414.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1300.00  DOWNSTREAM(FEET) =   1287.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   324.82   CHANNEL SLOPE =  0.0400
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     19.63
  FLOW VELOCITY(FEET/SEC.) =   2.28   FLOW DEPTH(FEET) =   0.41
```

```
  TRAVEL TIME(MIN.) =   2.37   Tc(MIN.) =  20.71
  LONGEST FLOWPATH FROM NODE  21410.00 TO NODE  21414.00 =  1976.44 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021414.0 TO NODE LR021414.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  20.71
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.837
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.90      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    5.90      SUBAREA RUNOFF(CFS) =    7.37
  EFFECTIVE AREA(ACRES) =     20.24   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.61
  TOTAL AREA(ACRES) =     20.24       PEAK FLOW RATE(CFS) =      25.20

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

****************************************************************************
  FLOW PROCESS FROM NODE LR021414.0 TO NODE LR021415.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1287.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1277.00
  FLOW LENGTH(FEET) =   263.30   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  10.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.23
  PIPE-FLOW(CFS) =     25.20
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =  21.01
  LONGEST FLOWPATH FROM NODE  21410.00 TO NODE  21415.00 =  2239.74 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021415.0 TO NODE LR021415.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.01
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.820
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B        0.54      0.75      0.25    56
  PUBLIC PARK                B        1.31      0.75      0.85    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.69      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
```



```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.65
  SUBAREA AREA(ACRES) =    2.54      SUBAREA RUNOFF(CFS) =    3.04
  EFFECTIVE AREA(ACRES) =     22.78   AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.61
  TOTAL AREA(ACRES) =     22.78       PEAK FLOW RATE(CFS) =      27.95

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

****************************************************************************
  FLOW PROCESS FROM NODE LR021415.0 TO NODE LR021416.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1277.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1263.00
  FLOW LENGTH(FEET) =   509.70   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  12.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.04
  PIPE-FLOW(CFS) =     27.95
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.65    Tc(MIN.) =  21.67
  LONGEST FLOWPATH FROM NODE  21410.00 TO NODE  21416.00 =  2749.44 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021416.0 TO NODE LR021416.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.67
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.787
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B        2.38      0.75      0.25    56
  PUBLIC PARK                B        2.15      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.53
  SUBAREA AREA(ACRES) =    4.53      SUBAREA RUNOFF(CFS) =    5.66
  EFFECTIVE AREA(ACRES) =     27.31   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     27.31       PEAK FLOW RATE(CFS) =      32.93

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

****************************************************************************
  FLOW PROCESS FROM NODE LR021416.0 TO NODE LR021417.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1263.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1250.00
  FLOW LENGTH(FEET) =   417.28   MANNING'S N =  0.013
```

```
  USER SPECIFIED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  12.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.20
  PIPE-FLOW(CFS) =     32.93
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.49    Tc(MIN.) =  22.16
  LONGEST FLOWPATH FROM NODE  21410.00 TO NODE  21417.00 =  3166.72 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021417.0 TO NODE LR021417.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  22.16
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.763
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.24      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.73      0.75      0.60    56
  MOBILE HOME PARK           B        0.34      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.42
  SUBAREA AREA(ACRES) =    1.31      SUBAREA RUNOFF(CFS) =    1.71
  EFFECTIVE AREA(ACRES) =     28.62   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.59
  TOTAL AREA(ACRES) =     28.62       PEAK FLOW RATE(CFS) =      34.05

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

****************************************************************************
  FLOW PROCESS FROM NODE LR021417.0 TO NODE LR021417.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  22.16
  RAINFALL INTENSITY(INCH/HR) =   1.76
  AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.59
  EFFECTIVE STREAM AREA(ACRES) =    28.62
  TOTAL STREAM AREA(ACRES) =    28.62
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     34.05

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    114.66  16.45    2.109  0.75( 0.40) 0.53    74.4 LR021400.0
      2     34.05  22.16    1.763  0.75( 0.44) 0.59    28.6 LR021410.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.
```



```
  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    146.53  16.45    2.109  0.75( 0.41) 0.54    95.7 LR021400.0
      2    125.57  22.16    1.763  0.75( 0.41) 0.55   103.1 LR021410.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    146.53    Tc(MIN.) =    16.45
  EFFECTIVE AREA(ACRES) =    95.68   AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.54
  TOTAL AREA(ACRES) =    103.06
  LONGEST FLOWPATH FROM NODE  21400.00 TO NODE  21417.00 =  3607.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021417.0 TO NODE LR021418.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1250.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1218.00
  FLOW LENGTH(FEET) =  2374.87   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  51.0 INCH PIPE IS  32.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.15
  PIPE-FLOW(CFS) =    146.53
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   2.61    Tc(MIN.) =  19.06
  LONGEST FLOWPATH FROM NODE  21400.00 TO NODE  21418.00 =  5982.23 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021418.0 TO NODE LR021418.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  19.06
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.930
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.88      0.75      0.60    56
  COMMERCIAL                 B        9.63      0.75      0.10    56
  MOBILE HOME PARK           B       29.24      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.25
  SUBAREA AREA(ACRES) =   42.75      SUBAREA RUNOFF(CFS) =   67.13
  EFFECTIVE AREA(ACRES) =    138.43   AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.45
  TOTAL AREA(ACRES) =    145.81       PEAK FLOW RATE(CFS) =     198.29

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

****************************************************************************
  FLOW PROCESS FROM NODE LR021418.0 TO NODE LR021418.0 IS CODE =  10
```

```
------------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
==============================================================================

******************************************************************************
  FLOW PROCESS FROM NODE LR021378.0 TO NODE LR021378.0 IS CODE = 15.1
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 21378.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1862.23    Tc(MIN.) =  33.82
  AREA-AVERAGED Fm(INCH/HR) =  0.44    Ybar = 0.52
  TOTAL AREA(ACRES) =    2153.63
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21378.00 = 18071.79 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE LR021378.0 TO NODE LR021378.0 IS CODE = 14.0
------------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1862.23    Tc(MIN.) =  33.82
  AREA-AVERAGED Fm(INCH/HR) =  0.44    Ybar = 0.52
  TOTAL AREA(ACRES) =    2153.63
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21378.00 = 18071.79 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE LR021378.0 TO NODE LR021378.0 IS CODE =  12
------------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
==============================================================================

******************************************************************************
  FLOW PROCESS FROM NODE LR021378.0 TO NODE LR021418.0 IS CODE =  54
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1235.00  DOWNSTREAM(FEET) =   1218.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1235.33   CHANNEL SLOPE =  0.0138
  CHANNEL BASE(FEET) =   13.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   6.50
  CHANNEL FLOW THRU SUBAREA(CFS) =   1862.23
  FLOW VELOCITY(FEET/SEC.) =  22.50   FLOW DEPTH(FEET) =   3.96
  TRAVEL TIME(MIN.) =   0.91   Tc(MIN.) =  34.74
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21418.00 = 19307.12 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE LR021418.0 TO NODE LR021418.0 IS CODE =  81
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
  MAINLINE Tc(MIN) =  34.74
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.346
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```



```
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        7.20      0.75       0.60    56
  COMMERCIAL                 B       26.95      0.75       0.10    56
  MOBILE HOME PARK           B       13.18      0.75       0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.22
  SUBAREA AREA(ACRES) =   47.33
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.54;6H= 2.09;24H= 4.16
  S-GRAPH: VALLEY(DEV.)= 96.4%;VALLEY(UNDEV.)/DESERT=  3.6%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.58; LAG(HR) = 0.46; Fm(INCH/HR) = 0.44; Ybar = 0.52
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.90; 30M = 0.90; 1HR = 0.90;
  3HR = 0.99; 6HR = 0.99; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   2200.96
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21418.00 = 19307.12 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0305; Lca/L=0.4,n=.0273; Lca/L=0.5,n=.0251;Lca/L=0.6,n=.0234
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     393.67
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1868.39
  TOTAL AREA(ACRES) =   2200.96       PEAK FLOW RATE(CFS) =    1868.39

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

******************************************************************************
  FLOW PROCESS FROM NODE LR021418.0 TO NODE LR021418.0 IS CODE =  11
------------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
==============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     1868.39    Tc(MIN.) =  34.74
  AREA-AVERAGED Fm(INCH/HR) =  0.44    Ybar = 0.52
  TOTAL AREA(ACRES) =    2200.96
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21418.00 = 19307.12 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    196.96  19.24    1.920  0.75( 0.34) 0.45   138.4 LR021400.0
      2    169.94  25.03    1.639  0.75( 0.34) 0.46   145.8 LR021410.0
  LONGEST FLOWPATH FROM NODE  21400.00 TO NODE  21418.00 =  5982.23 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.54;6H= 2.09;24H= 4.14
  S-GRAPH: VALLEY(DEV.)= 96.6%;VALLEY(UNDEV.)/DESERT=  3.4%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.58; LAG(HR) = 0.46; Fm(INCH/HR) = 0.43; Ybar = 0.51
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.90; 30M = 0.90; 1HR = 0.90;
  3HR = 0.98; 6HR = 0.99; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   2346.77
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21418.00 = 19307.12 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
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```
 Lca/L=0.3,n=.0305; Lca/L=0.4,n=.0273; Lca/L=0.5,n=.0251;Lca/L=0.6,n=.0234
 TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     421.57
 PEAK FLOW RATE(CFS) =    1986.38

****************************************************************************
 FLOW PROCESS FROM NODE LR021418.0 TO NODE LR021418.0 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE LR021418.0 TO NODE LR021419.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1218.00  DOWNSTREAM(FEET) =   1200.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1971.28   CHANNEL SLOPE =  0.0091
 CHANNEL BASE(FEET) =   13.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   6.50
 CHANNEL FLOW THRU SUBAREA(CFS) =   1986.38
 FLOW VELOCITY(FEET/SEC.) =  19.75   FLOW DEPTH(FEET) =   4.55
 TRAVEL TIME(MIN.) =   1.66   Tc(MIN.) =  36.40
 LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21419.00 = 21278.40 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021419.0 TO NODE LR021419.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  36.40
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.309
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       13.22      0.75      0.60    56
 COMMERCIAL                 B       80.88      0.75      0.10    56
 MOBILE HOME PARK           B       29.32      0.75      0.25    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.19
 SUBAREA AREA(ACRES) =  123.42
 UNIT-HYDROGRAPH DATA:
 RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.54;6H= 2.08;24H= 4.12
 S-GRAPH: VALLEY(DEV.)= 96.8%;VALLEY(UNDEV.)/DESERT=  3.2%
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
 Tc(HR) = 0.61; LAG(HR) = 0.49; Fm(INCH/HR) = 0.42; Ybar = 0.50
 USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
 DEPTH-AREA FACTORS: 5M = 0.89; 30M = 0.89; 1HR = 0.89;
 3HR = 0.98; 6HR = 0.99; 24HR= 1.00
 UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   2470.19
 LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21419.00 = 21278.40 FEET.
  EQUIVALENT BASIN FACTOR APPROXIMATIONS:
  Lca/L=0.3,n=.0293; Lca/L=0.4,n=.0262; Lca/L=0.5,n=.0241;Lca/L=0.6,n=.0225
 TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     453.59
 UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1995.02
 TOTAL AREA(ACRES) =   2470.19       PEAK FLOW RATE(CFS) =    1995.02
```



```
 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

****************************************************************************
 FLOW PROCESS FROM NODE LR021419.0 TO NODE LR021420.0 IS CODE =  48
----------------------------------------------------------------------------
 >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1200.00  DOWNSTREAM(FEET) =  1170.00
 FLOW LENGTH(FEET) =  3014.53   MANNING'S N =  0.014
 GIVEN BOX BASEWIDTH(FEET) =  19.00   GIVEN BOX HEIGHT(FEET) =   5.00
 *GIVEN BOX HEIGHT(FEET) =   5.00   ESTIMATED BOX BASEWIDTH(FEET) =   25.05
 ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  15.93
 BOX-FLOW(CFS) =   1995.02
 BOX-FLOW TRAVEL TIME(MIN.) =   3.15    Tc(MIN.) =  39.56
 LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21420.00 = 24292.93 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021420.0 TO NODE LR021420.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  39.56
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.245
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 B       73.53      0.75      0.10    56
 MOBILE HOME PARK           B       59.58      0.75      0.25    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       44.41      0.75      0.60    56
 PUBLIC PARK                B       28.10      0.75      0.85    56
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"      B       24.44      0.75      0.40    56
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        4.29      0.75      0.70    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.37
 SUBAREA AREA(ACRES) =  234.35
 UNIT-HYDROGRAPH DATA:
 RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.54;6H= 2.08;24H= 4.10
 S-GRAPH: VALLEY(DEV.)= 97.1%;VALLEY(UNDEV.)/DESERT=  2.9%
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
 Tc(HR) = 0.66; LAG(HR) = 0.53; Fm(INCH/HR) = 0.40; Ybar = 0.49
 USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
 DEPTH-AREA FACTORS: 5M = 0.88; 30M = 0.88; 1HR = 0.88;
 3HR = 0.98; 6HR = 0.99; 24HR= 0.99
 UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   2704.54
 LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21420.00 = 24292.93 FEET.
  EQUIVALENT BASIN FACTOR APPROXIMATIONS:
  Lca/L=0.3,n=.0283; Lca/L=0.4,n=.0254; Lca/L=0.5,n=.0233;Lca/L=0.6,n=.0217
 TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     503.74
 UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   2121.57
 TOTAL AREA(ACRES) =   2704.54       PEAK FLOW RATE(CFS) =    2121.57

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR021420.0 TO NODE LR021421.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1170.00  DOWNSTREAM(FEET) =  1159.00
  FLOW LENGTH(FEET) =   874.60   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  19.00   GIVEN BOX HEIGHT(FEET) =   5.00
  *GIVEN BOX HEIGHT(FEET) =   5.00   ESTIMATED BOX BASEWIDTH(FEET) =   23.83
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  17.81
  BOX-FLOW(CFS) =   2121.57
  BOX-FLOW TRAVEL TIME(MIN.) =   0.82    Tc(MIN.) =  40.38
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21421.00 = 25167.53 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021421.0 TO NODE LR021421.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  40.38
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.230
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        0.85      0.75      0.85    56
  COMMERCIAL                 B        0.87      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.17      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.48
  SUBAREA AREA(ACRES) =    1.89
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.73;1H= 0.96;3H= 1.54;6H= 2.08;24H= 4.10
  S-GRAPH: VALLEY(DEV.)= 97.1%;VALLEY(UNDEV.)/DESERT=  2.9%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.67; LAG(HR) = 0.54; Fm(INCH/HR) = 0.40; Ybar = 0.49
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.88; 30M = 0.88; 1HR = 0.88;
  3HR = 0.98; 6HR = 0.99; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   2706.43
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21421.00 = 25167.53 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0280; Lca/L=0.4,n=.0251; Lca/L=0.5,n=.0231;Lca/L=0.6,n=.0215
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     504.09
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   2097.18
  TOTAL AREA(ACRES) =   2706.43       PEAK FLOW RATE(CFS) =    2121.57
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

****************************************************************************
  FLOW PROCESS FROM NODE LR021421.0 TO NODE LR021421.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR021070.0 TO NODE LR021070.0 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 21070.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     4619.03    Tc(MIN.) =  60.70
  AREA-AVERAGED Fm(INCH/HR) =  0.50    Ybar = 0.54
  TOTAL AREA(ACRES) =   11023.91
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21070.00 = 47862.35 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021070.0 TO NODE LR021070.0 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     4619.03    Tc(MIN.) =  60.70
  AREA-AVERAGED Fm(INCH/HR) =  0.50    Ybar = 0.54
  TOTAL AREA(ACRES) =   11023.91
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21070.00 = 47862.35 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021070.0 TO NODE LR021070.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021070.0 TO NODE LR021421.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1183.00  DOWNSTREAM(FEET) =   1159.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1867.34   CHANNEL SLOPE =  0.0129
  CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   4619.03
  FLOW VELOCITY(FEET/SEC.) =  27.36   FLOW DEPTH(FEET) =   5.46
  TRAVEL TIME(MIN.) =   1.14   Tc(MIN.) =  61.84
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21421.00 = 49729.69 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021421.0 TO NODE LR021421.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  61.84
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.953
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       51.49      0.75      0.10    56
  RESIDENTIAL
```

```
"3-4 DWELLINGS/ACRE"       B        5.09      0.75      0.60    56
PUBLIC PARK                B        3.37      0.75      0.85    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.18
SUBAREA AREA(ACRES) =   59.95
UNIT-HYDROGRAPH DATA:
RAINFALL(INCH): 5M= 0.36;30M= 0.74;1H= 0.98;3H= 1.69;6H= 2.40;24H= 5.14
S-GRAPH: VALLEY(DEV.)= 71.9%;VALLEY(UNDEV.)/DESERT= 28.1%
         MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
Tc(HR) = 1.03; LAG(HR) = 0.82; Fm(INCH/HR) = 0.49; Ybar = 0.54
USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
DEPTH-AREA FACTORS: 5M = 0.65; 30M = 0.66; 1HR = 0.67;
3HR = 0.94; 6HR = 0.97; 24HR= 0.98
UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  11083.86
LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21421.00 = 49729.69 FEET.
 EQUIVALENT BASIN FACTOR APPROXIMATIONS:
 Lca/L=0.3,n=.0273; Lca/L=0.4,n=.0245; Lca/L=0.5,n=.0225;Lca/L=0.6,n=.0210
TIME OF PEAK FLOW(HR) = 16.83  RUNOFF VOLUME(AF) =    2234.53
UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   4542.04
TOTAL AREA(ACRES) =  11083.86       PEAK FLOW RATE(CFS) =    4619.03
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

****************************************************************************
 FLOW PROCESS FROM NODE LR021421.0 TO NODE LR021421.0 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 PEAK FLOW RATE(CFS) =     4619.03    Tc(MIN.) =  61.84
 AREA-AVERAGED Fm(INCH/HR) =  0.49    Ybar = 0.54
 TOTAL AREA(ACRES) =   11083.86
 LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21421.00 = 49729.69 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
 PEAK FLOW RATE(CFS) =     2121.57    Tc(MIN.) =  40.38
 AREA-AVERAGED Fm(INCH/HR) =  0.40    Ybar = 0.49
 TOTAL AREA(ACRES) =    2706.43
 LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21421.00 = 25167.53 FEET.

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 UNIT-HYDROGRAPH DATA:
 RAINFALL(INCH): 5M= 0.36;30M= 0.74;1H= 0.97;3H= 1.66;6H= 2.33;24H= 4.93
 S-GRAPH: VALLEY(DEV.)= 76.8%;VALLEY(UNDEV.)/DESERT= 23.2%
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
 Tc(HR) = 1.03; LAG(HR) = 0.82; Fm(INCH/HR) = 0.48; Ybar = 0.53
 USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
 DEPTH-AREA FACTORS: 5M = 0.61; 30M = 0.63; 1HR = 0.63;
 3HR = 0.92; 6HR = 0.96; 24HR= 0.98
 UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  13790.29
 LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21421.00 = 49729.69 FEET.
  EQUIVALENT BASIN FACTOR APPROXIMATIONS:
  Lca/L=0.3,n=.0273; Lca/L=0.4,n=.0245; Lca/L=0.5,n=.0225;Lca/L=0.6,n=.0210
 TIME OF PEAK FLOW(HR) = 16.83  RUNOFF VOLUME(AF) =    2702.10
 PEAK FLOW RATE(CFS) =    5402.78
```



```
****************************************************************************
 FLOW PROCESS FROM NODE LR021421.0 TO NODE LR021421.0 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE LR021421.0 TO NODE LR021422.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1159.00  DOWNSTREAM(FEET) =   1153.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   938.13   CHANNEL SLOPE =  0.0064
 CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =  10.00
 CHANNEL FLOW THRU SUBAREA(CFS) =   5402.78
 FLOW VELOCITY(FEET/SEC.) =  22.22   FLOW DEPTH(FEET) =   7.11
 TRAVEL TIME(MIN.) =   0.70   Tc(MIN.) =  62.54
 LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21422.00 = 50667.82 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021422.0 TO NODE LR021422.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  62.54
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.946
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 B       65.40      0.75      0.10    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.90      0.75      0.60    56
 RESIDENTIAL
 "11+ DWELLINGS/ACRE"       B        4.85      0.75      0.20    56
 PUBLIC PARK                B        2.00      0.75      0.85    56
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"      B       47.14      0.75      0.40    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.24
 SUBAREA AREA(ACRES) =  121.29
 UNIT-HYDROGRAPH DATA:
 RAINFALL(INCH): 5M= 0.36;30M= 0.74;1H= 0.97;3H= 1.66;6H= 2.33;24H= 4.93
 S-GRAPH: VALLEY(DEV.)= 77.0%;VALLEY(UNDEV.)/DESERT= 23.0%
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
 Tc(HR) = 1.04; LAG(HR) = 0.83; Fm(INCH/HR) = 0.47; Ybar = 0.53
 USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
 DEPTH-AREA FACTORS: 5M = 0.61; 30M = 0.62; 1HR = 0.63;
 3HR = 0.92; 6HR = 0.96; 24HR= 0.98
 UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  13911.58
 LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21422.00 = 50667.82 FEET.
  EQUIVALENT BASIN FACTOR APPROXIMATIONS:
  Lca/L=0.3,n=.0271; Lca/L=0.4,n=.0243; Lca/L=0.5,n=.0224;Lca/L=0.6,n=.0209
 TIME OF PEAK FLOW(HR) = 16.83  RUNOFF VOLUME(AF) =    2731.89
 UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   5388.94
 TOTAL AREA(ACRES) =  13911.58       PEAK FLOW RATE(CFS) =    5402.78
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  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

****************************************************************************
  FLOW PROCESS FROM NODE LR021422.0 TO NODE LR021423.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1153.00  DOWNSTREAM(FEET) =   1148.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   670.94   CHANNEL SLOPE =  0.0075
  CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   5402.78
  FLOW VELOCITY(FEET/SEC.) =  23.49   FLOW DEPTH(FEET) =   6.83
  TRAVEL TIME(MIN.) =   0.48   Tc(MIN.) =  63.02
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21423.00 = 51338.76 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021423.0 TO NODE LR021423.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  63.02
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.942
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.99      0.75      0.60    56
  COMMERCIAL                 B       11.78      0.75      0.10    56
  MOBILE HOME PARK           B        4.78      0.75      0.25    56
  PUBLIC PARK                B        1.74      0.75      0.85    56
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B        0.99      0.75      0.20    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.25
  SUBAREA AREA(ACRES) =   21.28
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.74;1H= 0.97;3H= 1.66;6H= 2.33;24H= 4.92
  S-GRAPH: VALLEY(DEV.)= 77.0%;VALLEY(UNDEV.)/DESERT= 23.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 1.05; LAG(HR) = 0.84; Fm(INCH/HR) = 0.47; Ybar = 0.53
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.60; 30M = 0.62; 1HR = 0.63;
  3HR = 0.92; 6HR = 0.96; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  13932.86
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21423.00 = 51338.76 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0270; Lca/L=0.4,n=.0242; Lca/L=0.5,n=.0223;Lca/L=0.6,n=.0208
  TIME OF PEAK FLOW(HR) = 16.92  RUNOFF VOLUME(AF) =    2737.08
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   5406.31
  TOTAL AREA(ACRES) =  13932.86       PEAK FLOW RATE(CFS) =    5406.31

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR021423.0 TO NODE LR021439.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1148.00  DOWNSTREAM(FEET) =   1143.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   702.31   CHANNEL SLOPE =  0.0071
  CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   5406.31
  FLOW VELOCITY(FEET/SEC.) =  23.10   FLOW DEPTH(FEET) =   6.92
  TRAVEL TIME(MIN.) =   0.51   Tc(MIN.) =  63.53
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21439.00 = 52041.07 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021439.0 TO NODE LR021439.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  63.53
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.937
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.52      0.75      0.60    56
  PUBLIC PARK                B        1.21      0.75      0.85    56
  MOBILE HOME PARK           B        4.21      0.75      0.25    56
  SCHOOL                     B        0.18      0.75      0.60    56
  COMMERCIAL                 B        0.96      0.75      0.10    56
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B        0.39      0.75      0.20    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.36
  SUBAREA AREA(ACRES) =    7.47
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.74;1H= 0.97;3H= 1.66;6H= 2.33;24H= 4.92
  S-GRAPH: VALLEY(DEV.)= 77.1%;VALLEY(UNDEV.)/DESERT= 22.9%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 1.06; LAG(HR) = 0.85; Fm(INCH/HR) = 0.47; Ybar = 0.53
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.60; 30M = 0.62; 1HR = 0.63;
  3HR = 0.92; 6HR = 0.96; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  13940.33
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21439.00 = 52041.07 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0269; Lca/L=0.4,n=.0241; Lca/L=0.5,n=.0222;Lca/L=0.6,n=.0207
  TIME OF PEAK FLOW(HR) = 16.92  RUNOFF VOLUME(AF) =    2738.65
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   5425.35
  TOTAL AREA(ACRES) =  13940.33       PEAK FLOW RATE(CFS) =    5425.35

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

****************************************************************************
  FLOW PROCESS FROM NODE LR021439.0 TO NODE LR021439.0 IS CODE =   1
```

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------------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =    5425.35    Tc(MIN.) =  63.53
  AREA-AVERAGED Fm(INCH/HR) =  0.47   Ybar = 0.53
  TOTAL AREA(ACRES) =   13940.33

******************************************************************************
  FLOW PROCESS FROM NODE LR021430.0 TO NODE LR021431.0 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   200.00
  ELEVATION DATA: UPSTREAM(FEET) =   1220.00  DOWNSTREAM(FEET) =   1214.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.103
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  4.255
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.20      0.75      0.50    56    6.53
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.38      0.75      0.60    56    6.92
  COMMERCIAL                 B        3.33      0.75      0.10    56    5.10
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.31
  SUBAREA RUNOFF(CFS) =     21.38
  TOTAL AREA(ACRES) =      5.91   PEAK FLOW RATE(CFS) =     21.38

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

******************************************************************************
  FLOW PROCESS FROM NODE LR021431.0 TO NODE LR021432.0 IS CODE =  63
------------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
==============================================================================
  UPSTREAM ELEVATION(FEET) = 1214.00  DOWNSTREAM ELEVATION(FEET) = 1209.00
  STREET LENGTH(FEET) =   286.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.03

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      32.41
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    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.56
    HALFSTREET FLOOD WIDTH(FEET) =   20.21
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.79
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.13
  STREET FLOW TRAVEL TIME(MIN.) =   1.26   Tc(MIN.) =   6.36
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.729
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.32      0.75      0.50    56
  COMMERCIAL                 B        5.86      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.61      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.16
  SUBAREA AREA(ACRES) =     6.79      SUBAREA RUNOFF(CFS) =   22.04
  EFFECTIVE AREA(ACRES) =     12.70    AREA-AVERAGED Fm(INCH/HR) =  0.18
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.23
  TOTAL AREA(ACRES) =     12.70        PEAK FLOW RATE(CFS) =      40.62

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.60   HALFSTREET FLOOD WIDTH(FEET) =  22.09
  FLOW VELOCITY(FEET/SEC.) =  4.01   DEPTH*VELOCITY(FT*FT/SEC.) =   2.40
  LONGEST FLOWPATH FROM NODE  21430.00 TO NODE  21432.00 =   486.00 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE LR021432.0 TO NODE LR021433.0 IS CODE =  63
------------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
==============================================================================
  UPSTREAM ELEVATION(FEET) = 1209.00  DOWNSTREAM ELEVATION(FEET) = 1206.00
  STREET LENGTH(FEET) =   254.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      50.47
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.68
    HALFSTREET FLOOD WIDTH(FEET) =   26.41
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.65
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.47
  STREET FLOW TRAVEL TIME(MIN.) =   1.16   Tc(MIN.) =   7.52
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.372
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  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.33      0.75      0.50    56
  COMMERCIAL                 B        5.82      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.58      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.16
  SUBAREA AREA(ACRES) =    6.73      SUBAREA RUNOFF(CFS) =   19.69
  EFFECTIVE AREA(ACRES) =     19.43    AREA-AVERAGED Fm(INCH/HR) =  0.16
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.21
  TOTAL AREA(ACRES) =     19.43        PEAK FLOW RATE(CFS) =      56.24

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.70   HALFSTREET FLOOD WIDTH(FEET) =  28.60
  FLOW VELOCITY(FEET/SEC.) =  3.74   DEPTH*VELOCITY(FT*FT/SEC.) =   2.62
  LONGEST FLOWPATH FROM NODE  21430.00 TO NODE  21433.00 =   740.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021433.0 TO NODE LR021434.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1206.00  DOWNSTREAM ELEVATION(FEET) = 1202.00
  STREET LENGTH(FEET) =   349.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      69.18
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.75
    HALFSTREET FLOOD WIDTH(FEET) =   33.44
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.84
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.87
  STREET FLOW TRAVEL TIME(MIN.) =   1.52   Tc(MIN.) =   9.03
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.021
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.43      0.75      0.50    56
  COMMERCIAL                 B        8.62      0.75      0.10    56
  RESIDENTIAL
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  "3-4 DWELLINGS/ACRE"       B        0.86      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.16
  SUBAREA AREA(ACRES) =    9.91      SUBAREA RUNOFF(CFS) =   25.87
  EFFECTIVE AREA(ACRES) =     29.34    AREA-AVERAGED Fm(INCH/HR) =  0.14
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.19
  TOTAL AREA(ACRES) =     29.34        PEAK FLOW RATE(CFS) =      75.95

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.77   HALFSTREET FLOOD WIDTH(FEET) =  35.47
  FLOW VELOCITY(FEET/SEC.) =  3.91   DEPTH*VELOCITY(FT*FT/SEC.) =   3.00
  LONGEST FLOWPATH FROM NODE  21430.00 TO NODE  21434.00 =  1089.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021434.0 TO NODE LR021435.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1202.00  DOWNSTREAM ELEVATION(FEET) = 1195.00
  STREET LENGTH(FEET) =   602.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      97.55
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.82
    HALFSTREET FLOOD WIDTH(FEET) =   41.10
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.11
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.39
  STREET FLOW TRAVEL TIME(MIN.) =   2.44   Tc(MIN.) =  11.48
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.617
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.83      0.75      0.50    56
  COMMERCIAL                 B       16.10      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.38      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.18
  SUBAREA AREA(ACRES) =   19.31      SUBAREA RUNOFF(CFS) =   43.16
  EFFECTIVE AREA(ACRES) =     48.65    AREA-AVERAGED Fm(INCH/HR) =  0.14
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.19
  TOTAL AREA(ACRES) =     48.65        PEAK FLOW RATE(CFS) =     108.45
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 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.85   HALFSTREET FLOOD WIDTH(FEET) =  43.60
 FLOW VELOCITY(FEET/SEC.) =  4.20   DEPTH*VELOCITY(FT*FT/SEC.) =   3.56
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  602.0 FT WITH ELEVATION-DROP =   7.0 FT, IS   48.3 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21435.00
 LONGEST FLOWPATH FROM NODE  21430.00 TO NODE  21435.00 =  1691.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021435.0 TO NODE LR021436.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1195.00  DOWNSTREAM ELEVATION(FEET) = 1183.00
 STREET LENGTH(FEET) =   889.50   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 39.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     138.98
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.89
   HALFSTREET FLOOD WIDTH(FEET) =   47.97
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.66
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.15
 STREET FLOW TRAVEL TIME(MIN.) =   3.18   Tc(MIN.) =  14.66
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.259
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        2.44      0.75      0.60    56
 COMMERCIAL                 B       28.76      0.75      0.10    56
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        0.28      0.75      0.50    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.14
 SUBAREA AREA(ACRES) =   31.48      SUBAREA RUNOFF(CFS) =   61.00
 EFFECTIVE AREA(ACRES) =     80.13    AREA-AVERAGED Fm(INCH/HR) =  0.13
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.17
 TOTAL AREA(ACRES) =     80.13        PEAK FLOW RATE(CFS) =     153.79

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87
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 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.92   HALFSTREET FLOOD WIDTH(FEET) =  50.63
 FLOW VELOCITY(FEET/SEC.) =  4.74   DEPTH*VELOCITY(FT*FT/SEC.) =   4.35
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  889.5 FT WITH ELEVATION-DROP =  12.0 FT, IS   73.5 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21436.00
 LONGEST FLOWPATH FROM NODE  21430.00 TO NODE  21436.00 =  2580.50 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021436.0 TO NODE LR021437.0 IS CODE =  33
----------------------------------------------------------------------------
 >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
 >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1183.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1172.00
 FLOW LENGTH(FEET) =   717.00   MANNING'S N =  0.013

 USER SPECIFIED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
 DEPTH OF FLOW IN  60.0 INCH PIPE IS  29.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  16.23
 PIPE-FLOW(CFS) =    153.79
 *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
 PIPEFLOW TRAVEL TIME(MIN.) =   0.78    Tc(MIN.) =  15.44
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.190
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 B       22.52      0.75      0.10    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        4.08      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.18
 SUBAREA AREA(ACRES) =   26.60      SUBAREA RUNOFF(CFS) =   49.26
 EFFECTIVE AREA(ACRES) =    106.73    AREA-AVERAGED Fm(INCH/HR) =  0.13
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.17
 TOTAL AREA(ACRES) =    106.73        PEAK FLOW RATE(CFS) =    198.05

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

 STREET CROSS-SECTION INFORMATION:
 CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 39.00
 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   44.26
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.63
   HALFSTREET FLOOD WIDTH(FEET) =   23.41
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.90
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.44
```

```
  LONGEST FLOWPATH FROM NODE  21430.00 TO NODE  21437.00 =  3297.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021437.0 TO NODE LR021438.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1172.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1157.00
  FLOW LENGTH(FEET) =  1061.00   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  34.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.73
  PIPE-FLOW(CFS) =    198.05
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.13    Tc(MIN.) =  16.57
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.099
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        0.28      0.63      1.00    65
  COMMERCIAL                 B       35.84      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.10      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.17
  SUBAREA AREA(ACRES) =   41.22      SUBAREA RUNOFF(CFS) =   73.25
  EFFECTIVE AREA(ACRES) =    147.95    AREA-AVERAGED Fm(INCH/HR) =  0.13
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.17
  TOTAL AREA(ACRES) =    147.95        PEAK FLOW RATE(CFS) =    262.60

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 39.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   64.55
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.71
    HALFSTREET FLOOD WIDTH(FEET) =   29.69
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.12
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.92
  LONGEST FLOWPATH FROM NODE  21430.00 TO NODE  21438.00 =  4358.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021438.0 TO NODE LR021439.0 IS CODE =  33
```



```
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1157.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1143.00
  FLOW LENGTH(FEET) =   895.00   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  40.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.46
  PIPE-FLOW(CFS) =    262.60
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.87    Tc(MIN.) =  17.43
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.036
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        0.33      0.63      1.00    65
  COMMERCIAL                 B       21.36      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.94      0.75      0.60    56
  MOBILE HOME PARK           B        2.98      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.19
  SUBAREA AREA(ACRES) =   28.61      SUBAREA RUNOFF(CFS) =   48.71
  EFFECTIVE AREA(ACRES) =    176.56    AREA-AVERAGED Fm(INCH/HR) =  0.13
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.17
  TOTAL AREA(ACRES) =    176.56        PEAK FLOW RATE(CFS) =    302.91

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 39.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   40.31
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.61
    HALFSTREET FLOOD WIDTH(FEET) =   22.48
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.84
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.34
  LONGEST FLOWPATH FROM NODE  21430.00 TO NODE  21439.00 =  5253.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021439.0 TO NODE LR021439.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
```

```
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  17.43
  RAINFALL INTENSITY(INCH/HR) =   2.04
  AREA-AVERAGED Fm(INCH/HR) =  0.13
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.17
  EFFECTIVE STREAM AREA(ACRES) =   176.56
  TOTAL STREAM AREA(ACRES) =   176.56
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    302.91
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1      5425.35   63.53    13940.33  LR020120.0
     2       302.91   17.43      176.56  LR021430.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.74;1H= 0.97;3H= 1.66;6H= 2.33;24H= 4.91
  S-GRAPH: VALLEY(DEV.)= 77.3%;VALLEY(UNDEV.)/DESERT= 22.7%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 1.06; LAG(HR) = 0.85; Fm(INCH/HR) = 0.47; Ybar = 0.52
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.60; 30M = 0.62; 1HR = 0.63;
  3HR = 0.92; 6HR = 0.96; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  14116.89
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21439.00 = 52041.07 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0269; Lca/L=0.4,n=.0241; Lca/L=0.5,n=.0222;Lca/L=0.6,n=.0207
  TIME OF PEAK FLOW(HR) = 16.92  RUNOFF VOLUME(AF) =    2785.39
  PEAK FLOW RATE(CFS) =   5502.04

****************************************************************************
  FLOW PROCESS FROM NODE LR021439.0 TO NODE LR021443.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1143.00  DOWNSTREAM(FEET) =   1135.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1468.88   CHANNEL SLOPE =  0.0054
  CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   5502.04
  FLOW VELOCITY(FEET/SEC.) =  21.06   FLOW DEPTH(FEET) =   7.47
  TRAVEL TIME(MIN.) =   1.16   Tc(MIN.) =  64.69
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21443.00 = 53509.95 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021443.0 TO NODE LR021443.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =    5502.04    Tc(MIN.) =  64.69
  AREA-AVERAGED Fm(INCH/HR) =  0.47   Ybar = 0.52
  TOTAL AREA(ACRES) =   14116.89
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR021440.0 TO NODE LR021441.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   665.71
  ELEVATION DATA: UPSTREAM(FEET) =   1142.00  DOWNSTREAM(FEET) =   1138.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.137
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.530
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  MOBILE HOME PARK            B        6.41      0.75       0.25    56   12.59
  PUBLIC PARK                 B        0.38      0.75       0.85    56   18.09
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.07      0.75       0.60    56   15.43
  SCHOOL                      B        0.09      0.75       0.60    56   15.43
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"        B        0.25      0.75       0.20    56   12.14
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.29
  SUBAREA RUNOFF(CFS) =     15.00
  TOTAL AREA(ACRES) =      7.20   PEAK FLOW RATE(CFS) =     15.00

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

****************************************************************************
  FLOW PROCESS FROM NODE LR021441.0 TO NODE LR021442.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1138.00  DOWNSTREAM ELEVATION(FEET) = 1136.00
  STREET LENGTH(FEET) =   701.10   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      29.58
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.66
    HALFSTREET FLOOD WIDTH(FEET) =   26.07
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.07
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.37
```

```
  STREET FLOW TRAVEL TIME(MIN.) =   5.66   Tc(MIN.) =  17.80
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.011
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        1.22      0.75       0.85    56
  MOBILE HOME PARK           B       16.66      0.75       0.25    56
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B        0.05      0.75       0.20    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.29
  SUBAREA AREA(ACRES) =   17.93      SUBAREA RUNOFF(CFS) =   28.95
  EFFECTIVE AREA(ACRES) =     25.13    AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.29
  TOTAL AREA(ACRES) =     25.13        PEAK FLOW RATE(CFS) =      40.59

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.73   HALFSTREET FLOOD WIDTH(FEET) =  29.49
  FLOW VELOCITY(FEET/SEC.) =  2.24   DEPTH*VELOCITY(FT*FT/SEC.) =   1.63
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  701.1 FT WITH ELEVATION-DROP =   2.0 FT, IS   33.4 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21442.00
  LONGEST FLOWPATH FROM NODE  21440.00 TO NODE  21442.00 =  1366.81 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021442.0 TO NODE LR021443.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1136.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1135.00
  FLOW LENGTH(FEET) =   150.38   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  21.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.49
  PIPE-FLOW(CFS) =     40.59
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.30    Tc(MIN.) =  18.09
  LONGEST FLOWPATH FROM NODE  21440.00 TO NODE  21443.00 =  1517.19 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021443.0 TO NODE LR021443.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  18.09
  RAINFALL INTENSITY(INCH/HR) =   1.99
  AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.29
```



```
  EFFECTIVE STREAM AREA(ACRES) =    25.13
  TOTAL STREAM AREA(ACRES) =    25.13
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     40.59
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1      5502.04   64.69    14116.89  LR020120.0
     2        40.59   18.09       25.13  LR021440.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.74;1H= 0.97;3H= 1.66;6H= 2.33;24H= 4.91
  S-GRAPH: VALLEY(DEV.)= 77.4%;VALLEY(UNDEV.)/DESERT= 22.6%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 1.08; LAG(HR) = 0.86; Fm(INCH/HR) = 0.47; Ybar = 0.52
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.60; 30M = 0.62; 1HR = 0.63;
  3HR = 0.92; 6HR = 0.96; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  14142.02
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21443.00 = 53509.95 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0267; Lca/L=0.4,n=.0239; Lca/L=0.5,n=.0220;Lca/L=0.6,n=.0205
  TIME OF PEAK FLOW(HR) = 16.92  RUNOFF VOLUME(AF) =    2791.17
  PEAK FLOW RATE(CFS) =   5521.42

****************************************************************************
  FLOW PROCESS FROM NODE LR021443.0 TO NODE LR021453.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1135.00  DOWNSTREAM(FEET) =   1118.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1571.70   CHANNEL SLOPE =  0.0108
  CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   5521.42
  FLOW VELOCITY(FEET/SEC.) =  27.04   FLOW DEPTH(FEET) =   6.27
  TRAVEL TIME(MIN.) =   0.97   Tc(MIN.) =  65.66
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21453.00 = 55081.64 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021453.0 TO NODE LR021453.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =    5521.42    Tc(MIN.) =  65.66
  AREA-AVERAGED Fm(INCH/HR) =  0.47   Ybar = 0.52
  TOTAL AREA(ACRES) =   14142.02

****************************************************************************
  FLOW PROCESS FROM NODE LR021450.0 TO NODE LR021451.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   526.00
```

```
 ELEVATION DATA: UPSTREAM(FEET) =   1132.00  DOWNSTREAM(FEET) =   1128.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.927
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.695
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 MOBILE HOME PARK           B        3.07      0.75      0.25    56   10.93
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.25
 SUBAREA RUNOFF(CFS) =      6.93
 TOTAL AREA(ACRES) =      3.07   PEAK FLOW RATE(CFS) =      6.93

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

****************************************************************************
 FLOW PROCESS FROM NODE LR021451.0 TO NODE LR021452.0 IS CODE =  92
----------------------------------------------------------------------------
 >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =   1128.00
 DOWNSTREAM NODE ELEVATION(FEET) =   1119.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   853.42
 "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
 PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
 PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
 MAXIMUM DEPTH(FEET) =   1.00
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.242
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        0.02      0.75      0.90    56
 MOBILE HOME PARK           B       18.33      0.75      0.25    56
 PUBLIC PARK                B        0.30      0.75      0.85    56
 RESIDENTIAL
 "11+ DWELLINGS/ACRE"       B        0.28      0.75      0.20    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.26
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     24.09
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.63
 AVERAGE FLOW DEPTH(FEET) =   0.64   FLOOD WIDTH(FEET) =   37.58
 "V" GUTTER FLOW TRAVEL TIME(MIN.) =   3.92   Tc(MIN.) =  14.85
 SUBAREA AREA(ACRES) =   18.93       SUBAREA RUNOFF(CFS) =   34.89
 EFFECTIVE AREA(ACRES) =   22.00     AREA-AVERAGED Fm(INCH/HR) =   0.19
 AREA-AVERAGED Fp(INCH/HR) =   0.75  AREA-AVERAGED Ap =   0.26
 TOTAL AREA(ACRES) =     22.00         PEAK FLOW RATE(CFS) =      40.57

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

 END OF SUBAREA "V" GUTTER HYDRAULICS:
 DEPTH(FEET) =  0.73   FLOOD WIDTH(FEET) =   47.43
 FLOW VELOCITY(FEET/SEC.) =   3.98   DEPTH*VELOCITY(FT*FT/SEC) =   2.89
 LONGEST FLOWPATH FROM NODE  21450.00 TO NODE  21452.00 =  1379.42 FEET.
```



```
****************************************************************************
 FLOW PROCESS FROM NODE LR021452.0 TO NODE LR021453.0 IS CODE =  33
----------------------------------------------------------------------------
 >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
 >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1119.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1118.00
 FLOW LENGTH(FEET) =   197.38   MANNING'S N =  0.013

 USER SPECIFIED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
 DEPTH OF FLOW IN  36.0 INCH PIPE IS  25.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   7.55
 PIPE-FLOW(CFS) =     40.57
 *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
 PIPEFLOW TRAVEL TIME(MIN.) =   0.47    Tc(MIN.) =  15.31
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.201
 SUBAREA AREA(ACRES) =    0.00      SUBAREA RUNOFF(CFS) =    0.00
 EFFECTIVE AREA(ACRES) =     22.00    AREA-AVERAGED Fm(INCH/HR) =  0.19
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.26
 TOTAL AREA(ACRES) =     22.00        PEAK FLOW RATE(CFS) =     40.57
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

 STREET CROSS-SECTION INFORMATION:
 CURB HEIGHT(INCHES) =  6.0       STREET HALFWIDTH(FEET) = 18.00
 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

 *NOTE: ESTIMATED PEAK FLOW DEFAULTED TO UPSTREAM PEAK FLOW;
        STREET HYDRAULICS NOT COMPUTED*
 LONGEST FLOWPATH FROM NODE  21450.00 TO NODE  21453.00 =  1576.80 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021453.0 TO NODE LR021453.0 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  15.31
 RAINFALL INTENSITY(INCH/HR) =   2.20
 AREA-AVERAGED Fm(INCH/HR) =  0.19
 AREA-AVERAGED Fp(INCH/HR) =  0.75
 AREA-AVERAGED Ap =  0.26
 EFFECTIVE STREAM AREA(ACRES) =    22.00
 TOTAL STREAM AREA(ACRES) =    22.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     40.57
 ** CONFLUENCE DATA **
```

```
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1      5521.42   65.66    14142.02  LR020120.0
     2        40.57   15.31       22.00  LR021450.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.74;1H= 0.97;3H= 1.66;6H= 2.33;24H= 4.91
  S-GRAPH: VALLEY(DEV.)= 77.4%;VALLEY(UNDEV.)/DESERT= 22.6%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 1.09; LAG(HR) = 0.88; Fm(INCH/HR) = 0.47; Ybar = 0.52
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.60; 30M = 0.62; 1HR = 0.63;
  3HR = 0.92; 6HR = 0.96; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  14164.02
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21453.00 = 55081.64 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0264; Lca/L=0.4,n=.0237; Lca/L=0.5,n=.0217;Lca/L=0.6,n=.0203
  TIME OF PEAK FLOW(HR) = 16.92  RUNOFF VOLUME(AF) =    2796.45
  PEAK FLOW RATE(CFS) =   5503.74
    (UPSTREAM NODE PEAK FLOW RATE(CFS) =   5521.42)
  PEAK FLOW RATE(CFS) USED =   5521.42

****************************************************************************
  FLOW PROCESS FROM NODE LR021453.0 TO NODE LR021469.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1118.00  DOWNSTREAM(FEET) =   1117.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   519.47   CHANNEL SLOPE =  0.0019
  CHANNEL BASE(FEET) =   22.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =  11.50
  CHANNEL FLOW THRU SUBAREA(CFS) =   5521.42
  FLOW VELOCITY(FEET/SEC.) =  14.35   FLOW DEPTH(FEET) =   9.42
  TRAVEL TIME(MIN.) =   0.60   Tc(MIN.) =  66.26
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21469.00 = 55601.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021469.0 TO NODE LR021469.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =    5521.42    Tc(MIN.) =  66.26
  AREA-AVERAGED Fm(INCH/HR) =  0.47   Ybar = 0.52
  TOTAL AREA(ACRES) =   14164.02

****************************************************************************
  FLOW PROCESS FROM NODE LR021460.0 TO NODE LR021461.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   626.73
  ELEVATION DATA: UPSTREAM(FEET) =   1222.00  DOWNSTREAM(FEET) =   1219.00
```



```
  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.633
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.596
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        2.48      0.75       0.60    56   15.77
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"        B        5.98      0.75       0.50    56   14.89
  COMMERCIAL                  B        1.53      0.75       0.10    56   11.63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.46
  SUBAREA RUNOFF(CFS) =     20.22
  TOTAL AREA(ACRES) =      9.99   PEAK FLOW RATE(CFS) =     20.22

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

****************************************************************************
  FLOW PROCESS FROM NODE LR021461.0 TO NODE LR021462.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1219.00  DOWNSTREAM ELEVATION(FEET) = 1216.00
  STREET LENGTH(FEET) =   478.63   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      25.79
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.57
    HALFSTREET FLOOD WIDTH(FEET) =   21.37
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.61
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.48
  STREET FLOW TRAVEL TIME(MIN.) =   3.05   Tc(MIN.) =  14.68
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.257
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"        B        6.46      0.75       0.50    56
  COMMERCIAL                  B        0.09      0.75       0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.49
  SUBAREA AREA(ACRES) =    6.55      SUBAREA RUNOFF(CFS) =   11.13
  EFFECTIVE AREA(ACRES) =     16.54    AREA-AVERAGED Fm(INCH/HR) =  0.36
```

```
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.48
  TOTAL AREA(ACRES) =     16.54        PEAK FLOW RATE(CFS) =      28.30

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.58   HALFSTREET FLOOD WIDTH(FEET) =  22.10
  FLOW VELOCITY(FEET/SEC.) =  2.69   DEPTH*VELOCITY(FT*FT/SEC.) =   1.57
  LONGEST FLOWPATH FROM NODE  21460.00 TO NODE  21462.00 =  1105.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021462.0 TO NODE LR021463.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1216.00  DOWNSTREAM(FEET) =   1211.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   268.66   CHANNEL SLOPE =  0.0186
  CHANNEL BASE(FEET) =    2.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   4.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     28.30
  FLOW VELOCITY(FEET/SEC.) =   9.00   FLOW DEPTH(FEET) =   0.85
  TRAVEL TIME(MIN.) =   0.50   Tc(MIN.) =  15.18
  LONGEST FLOWPATH FROM NODE  21460.00 TO NODE  21463.00 =  1374.02 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021463.0 TO NODE LR021463.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  15.18
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.212
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.34      0.75      0.60    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        8.08      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =    8.42      SUBAREA RUNOFF(CFS) =   13.91
  EFFECTIVE AREA(ACRES) =     24.96   AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.49
  TOTAL AREA(ACRES) =     24.96       PEAK FLOW RATE(CFS) =      41.54

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

****************************************************************************
  FLOW PROCESS FROM NODE LR021463.0 TO NODE LR021464.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1211.00  DOWNSTREAM(FEET) =   1205.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   384.00   CHANNEL SLOPE =  0.0156
```



```
  CHANNEL BASE(FEET) =    2.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   4.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     41.54
  FLOW VELOCITY(FEET/SEC.) =   9.34   FLOW DEPTH(FEET) =   1.07
  TRAVEL TIME(MIN.) =   0.69   Tc(MIN.) =  15.87
  LONGEST FLOWPATH FROM NODE  21460.00 TO NODE  21464.00 =  1758.02 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021464.0 TO NODE LR021464.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  15.87
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.155
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        6.76      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =    6.76      SUBAREA RUNOFF(CFS) =   10.83
  EFFECTIVE AREA(ACRES) =     31.72   AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.49
  TOTAL AREA(ACRES) =     31.72       PEAK FLOW RATE(CFS) =      51.08

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

****************************************************************************
  FLOW PROCESS FROM NODE LR021464.0 TO NODE LR021465.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1205.00  DOWNSTREAM(FEET) =   1197.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   540.00   CHANNEL SLOPE =  0.0148
  CHANNEL BASE(FEET) =    2.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   4.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     51.08
  FLOW VELOCITY(FEET/SEC.) =   9.67   FLOW DEPTH(FEET) =   1.20
  TRAVEL TIME(MIN.) =   0.93   Tc(MIN.) =  16.80
  LONGEST FLOWPATH FROM NODE  21460.00 TO NODE  21465.00 =  2298.02 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021465.0 TO NODE LR021465.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  16.80
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.082
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.08      0.75      0.10    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        7.60      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
```

```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =    7.68      SUBAREA RUNOFF(CFS) =   11.83
  EFFECTIVE AREA(ACRES) =     39.40   AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.49
  TOTAL AREA(ACRES) =     39.40       PEAK FLOW RATE(CFS) =      60.84

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

****************************************************************************
  FLOW PROCESS FROM NODE LR021465.0 TO NODE LR021466.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1197.00  DOWNSTREAM(FEET) =   1187.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   678.50   CHANNEL SLOPE =  0.0147
  CHANNEL BASE(FEET) =    2.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   4.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     60.84
  FLOW VELOCITY(FEET/SEC.) =  10.08   FLOW DEPTH(FEET) =   1.31
  TRAVEL TIME(MIN.) =   1.12   Tc(MIN.) =  17.92
  LONGEST FLOWPATH FROM NODE  21460.00 TO NODE  21466.00 =  2976.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021466.0 TO NODE LR021466.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.92
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.003
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.26      0.75      0.10    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        8.00      0.75      0.50    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.11      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.49
  SUBAREA AREA(ACRES) =    8.37      SUBAREA RUNOFF(CFS) =   12.33
  EFFECTIVE AREA(ACRES) =     47.77   AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.49
  TOTAL AREA(ACRES) =     47.77       PEAK FLOW RATE(CFS) =      70.36

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

****************************************************************************
  FLOW PROCESS FROM NODE LR021466.0 TO NODE LR021467.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1187.00  DOWNSTREAM(FEET) =   1170.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1180.01   CHANNEL SLOPE =  0.0144
  CHANNEL BASE(FEET) =    2.00   "Z" FACTOR =   2.000
```



```
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   4.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     70.36
  FLOW VELOCITY(FEET/SEC.) =  10.39   FLOW DEPTH(FEET) =   1.41
  TRAVEL TIME(MIN.) =   1.89   Tc(MIN.) =  19.81
  LONGEST FLOWPATH FROM NODE  21460.00 TO NODE  21467.00 =  4156.53 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021467.0 TO NODE LR021467.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  19.81
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.886
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        7.62      0.75      0.50    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        1.76      0.63      1.00    65
  COMMERCIAL                 B        2.13      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.15      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.71
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =   11.66      SUBAREA RUNOFF(CFS) =   16.02
  EFFECTIVE AREA(ACRES) =     59.43   AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.49
  TOTAL AREA(ACRES) =     59.43       PEAK FLOW RATE(CFS) =      81.35

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

****************************************************************************
  FLOW PROCESS FROM NODE LR021467.0 TO NODE LR021468.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1170.00  DOWNSTREAM(FEET) =   1156.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1415.51   CHANNEL SLOPE =  0.0099
  CHANNEL BASE(FEET) =    2.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   4.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     81.35
  FLOW VELOCITY(FEET/SEC.) =   9.37   FLOW DEPTH(FEET) =   1.64
  TRAVEL TIME(MIN.) =   2.52   Tc(MIN.) =  22.33
  LONGEST FLOWPATH FROM NODE  21460.00 TO NODE  21468.00 =  5572.04 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021468.0 TO NODE LR021468.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  22.33
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.755
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  COMMERCIAL                  B        0.73      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.64      0.75      0.60    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"        B       11.78      0.75      0.50    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                  B        2.68      0.63      1.00    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.71
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.57
  SUBAREA AREA(ACRES) =   15.83      SUBAREA RUNOFF(CFS) =   19.21
  EFFECTIVE AREA(ACRES) =     75.26   AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.51
  TOTAL AREA(ACRES) =     75.26       PEAK FLOW RATE(CFS) =      93.58

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

****************************************************************************
  FLOW PROCESS FROM NODE LR021468.0 TO NODE LR021469.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1156.00  DOWNSTREAM(FEET) =   1117.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3195.53   CHANNEL SLOPE =  0.0122
  CHANNEL BASE(FEET) =    2.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   4.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     93.58
  FLOW VELOCITY(FEET/SEC.) =  10.51   FLOW DEPTH(FEET) =   1.67
  TRAVEL TIME(MIN.) =   5.07   Tc(MIN.) =  27.40
  LONGEST FLOWPATH FROM NODE  21460.00 TO NODE  21469.00 =  8767.57 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021469.0 TO NODE LR021469.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  27.40
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.553
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                  B        8.14      0.75      0.10    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                  B        7.28      0.63      1.00    65
  PUBLIC PARK                 B        6.06      0.75      0.85    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"        B        3.35      0.75      0.50    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.97      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"          B        0.23      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   26.03      SUBAREA RUNOFF(CFS) =   26.57
  EFFECTIVE AREA(ACRES) =    101.29   AREA-AVERAGED Fm(INCH/HR) =  0.39
  AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.53
  TOTAL AREA(ACRES) =    101.29       PEAK FLOW RATE(CFS) =     106.42
```



```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

****************************************************************************
  FLOW PROCESS FROM NODE LR021469.0 TO NODE LR021469.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  27.40
  RAINFALL INTENSITY(INCH/HR) =   1.55
  AREA-AVERAGED Fm(INCH/HR) =  0.39
  AREA-AVERAGED Fp(INCH/HR) =  0.72
  AREA-AVERAGED Ap =  0.53
  EFFECTIVE STREAM AREA(ACRES) =   101.29
  TOTAL STREAM AREA(ACRES) =   101.29
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    106.42
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1      5521.42   66.26    14164.02  LR020120.0
     2       106.42   27.40      101.29  LR021460.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.74;1H= 0.97;3H= 1.66;6H= 2.32;24H= 4.90
  S-GRAPH: VALLEY(DEV.)= 77.5%;VALLEY(UNDEV.)/DESERT= 22.5%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 1.10; LAG(HR) = 0.88; Fm(INCH/HR) = 0.47; Ybar = 0.52
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.60; 30M = 0.62; 1HR = 0.63;
  3HR = 0.92; 6HR = 0.96; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  14265.31
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21469.00 = 55601.11 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0264; Lca/L=0.4,n=.0237; Lca/L=0.5,n=.0218;Lca/L=0.6,n=.0203
  TIME OF PEAK FLOW(HR) = 16.92  RUNOFF VOLUME(AF) =    2813.10
  PEAK FLOW RATE(CFS) =   5506.30
    (UPSTREAM NODE PEAK FLOW RATE(CFS) =   5521.42)
  PEAK FLOW RATE(CFS) USED =   5521.42

****************************************************************************
  FLOW PROCESS FROM NODE LR021469.0 TO NODE LR021470.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1117.00  DOWNSTREAM(FEET) =   1110.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   370.28   CHANNEL SLOPE =  0.0189
  CHANNEL BASE(FEET) =   22.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =  11.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   5521.42
  FLOW VELOCITY(FEET/SEC.) =  32.72   FLOW DEPTH(FEET) =   5.21
  TRAVEL TIME(MIN.) =   0.19   Tc(MIN.) =  66.45
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21470.00 = 55971.39 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR021470.0 TO NODE LR021470.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  66.45
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.912
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B       17.62      0.75      0.50    56
  COMMERCIAL                 B        0.37      0.75      0.10    56
  PUBLIC PARK                B        0.37      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =   18.36
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.36;30M= 0.74;1H= 0.97;3H= 1.66;6H= 2.32;24H= 4.90
  S-GRAPH: VALLEY(DEV.)= 77.5%;VALLEY(UNDEV.)/DESERT= 22.5%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 1.11; LAG(HR) = 0.89; Fm(INCH/HR) = 0.47; Ybar = 0.52
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.60; 30M = 0.62; 1HR = 0.63;
  3HR = 0.92; 6HR = 0.96; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  14283.67
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21470.00 = 55971.39 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0263; Lca/L=0.4,n=.0236; Lca/L=0.5,n=.0217;Lca/L=0.6,n=.0202
  TIME OF PEAK FLOW(HR) = 16.92  RUNOFF VOLUME(AF) =    2816.20
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   5501.88
  TOTAL AREA(ACRES) =  14283.67       PEAK FLOW RATE(CFS) =    5521.42
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.36; 30M = 0.74; 1HR = 0.97; 3HR = 1.53; 6HR = 2.04; 24HR = 3.87

****************************************************************************
  FLOW PROCESS FROM NODE LR021470.0 TO NODE LR021470.0 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 21470.dna
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =  14283.67  TC(MIN.) =     66.45
  AREA-AVERAGED Fm(INCH/HR)=  0.47   Ybar =  0.52
  PEAK FLOW RATE(CFS)   =   5521.42
============================================================================
============================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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                          Analysis prepared by:

                          San Bernardino County
                    Transportation/ Flood Control Department

                          Water Resources Division

 ************************ DESCRIPTION OF STUDY *************************
* LR0201ZZ                                                             *
* 10- Year Storm                                                       *
*                                                                      *
 ************************************************************************

  FILE NAME: LR0201ZZ.Z10
  TIME/DATE OF STUDY: 09:58 02/22/2006
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 0.8500

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
```



```
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


************************************************************************
  FLOW PROCESS FROM NODE LR020100.0 TO NODE LR020101.0 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   219.52
  ELEVATION DATA: UPSTREAM(FEET) =   2400.00  DOWNSTREAM(FEET) =   2385.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.474
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.233
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        1.33      0.61      1.00    66   10.43
  NATURAL FAIR COVER
  "OPEN BRUSH"              A        0.04      0.86      1.00    46   10.43
  RESIDENTIAL
  "2 DWELLINGS/ACRE"        B        2.55      0.75      0.70    56    6.47
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.80
  SUBAREA RUNOFF(CFS) =      9.44
  TOTAL AREA(ACRES) =      3.92   PEAK FLOW RATE(CFS) =      9.44

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.57; 6HR = 2.39; 24HR = 4.88

************************************************************************
  FLOW PROCESS FROM NODE LR020101.0 TO NODE LR020102.0 IS CODE =  63
------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
========================================================================
  UPSTREAM ELEVATION(FEET) = 2385.00  DOWNSTREAM ELEVATION(FEET) = 2340.00
```

```
  STREET LENGTH(FEET) =   138.73   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.45

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      14.51
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.29
    HALFSTREET FLOOD WIDTH(FEET) =    8.04
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.49
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.72
  STREET FLOW TRAVEL TIME(MIN.) =   0.24   Tc(MIN.) =   6.72
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.162
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        0.45      0.86      1.00    46
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        0.90      0.61      1.00    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        3.01      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.73
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.79
  SUBAREA AREA(ACRES) =    4.36      SUBAREA RUNOFF(CFS) =   10.14
  EFFECTIVE AREA(ACRES) =      8.28    AREA-AVERAGED Fm(INCH/HR) =  0.57
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =      8.28        PEAK FLOW RATE(CFS) =      19.33

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.57; 6HR = 2.39; 24HR = 4.88

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.31   HALFSTREET FLOOD WIDTH(FEET) =   9.13
  FLOW VELOCITY(FEET/SEC.) = 10.15   DEPTH*VELOCITY(FT*FT/SEC.) =   3.14
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20102.00 =   358.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020102.0 TO NODE LR020103.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2340.00  DOWNSTREAM ELEVATION(FEET) = 2320.00
  STREET LENGTH(FEET) =   287.27   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
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  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.64

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      26.52
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.41
    HALFSTREET FLOOD WIDTH(FEET) =   14.37
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.08
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.51
  STREET FLOW TRAVEL TIME(MIN.) =   0.79   Tc(MIN.) =   7.51
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.959
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                A        1.17      0.86      1.00    46
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        2.63      0.61      1.00    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        3.01      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.71
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.87
  SUBAREA AREA(ACRES) =    6.81      SUBAREA RUNOFF(CFS) =   14.36
  EFFECTIVE AREA(ACRES) =     15.09    AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     15.09        PEAK FLOW RATE(CFS) =      32.17

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.57; 6HR = 2.39; 24HR = 4.88

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.44   HALFSTREET FLOOD WIDTH(FEET) =  15.54
  FLOW VELOCITY(FEET/SEC.) =  6.35   DEPTH*VELOCITY(FT*FT/SEC.) =   2.78
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20103.00 =   645.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020103.0 TO NODE LR020104.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2320.00  DOWNSTREAM ELEVATION(FEET) = 2310.00
  STREET LENGTH(FEET) =   249.70   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.74
```

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  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      60.08
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.56
  HALFSTREET FLOOD WIDTH(FEET) =   20.76
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.42
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.57
 STREET FLOW TRAVEL TIME(MIN.) =   0.65   Tc(MIN.) =   8.15
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.815
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               A        1.82      0.86      1.00    46
 NATURAL FAIR COVER
 "OPEN BRUSH"               B       19.46      0.61      1.00    66
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        6.79      0.75      0.70    56
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         A        0.01      0.98      0.70    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.66
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.93
 SUBAREA AREA(ACRES) =   28.08      SUBAREA RUNOFF(CFS) =   55.78
 EFFECTIVE AREA(ACRES) =     43.17    AREA-AVERAGED Fm(INCH/HR) =  0.60
 AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.89
 TOTAL AREA(ACRES) =     43.17        PEAK FLOW RATE(CFS) =      86.01

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.57; 6HR = 2.39; 24HR = 4.88

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.61   HALFSTREET FLOOD WIDTH(FEET) =  23.69
 FLOW VELOCITY(FEET/SEC.) =  7.19   DEPTH*VELOCITY(FT*FT/SEC.) =   4.42
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  249.7 FT WITH ELEVATION-DROP =  10.0 FT, IS   58.9 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20104.00
 LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20104.00 =   895.22 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020104.0 TO NODE LR020105.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2310.00  DOWNSTREAM ELEVATION(FEET) = 2270.00
 STREET LENGTH(FEET) =   747.57   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.69
```



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  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     134.10
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.67
  HALFSTREET FLOOD WIDTH(FEET) =   26.56
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.04
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.07
 STREET FLOW TRAVEL TIME(MIN.) =   1.38   Tc(MIN.) =   9.53
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.563
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               A        5.68      0.86      1.00    46
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         A        3.92      0.98      0.70    32
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        6.10      0.75      0.70    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B       39.60      0.61      1.00    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.95
 SUBAREA AREA(ACRES) =   55.30      SUBAREA RUNOFF(CFS) =   96.02
 EFFECTIVE AREA(ACRES) =     98.47    AREA-AVERAGED Fm(INCH/HR) =  0.62
 AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     98.47        PEAK FLOW RATE(CFS) =     172.23

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.57; 6HR = 2.39; 24HR = 4.88

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.72   HALFSTREET FLOOD WIDTH(FEET) =  29.25
 FLOW VELOCITY(FEET/SEC.) =  9.66   DEPTH*VELOCITY(FT*FT/SEC.) =   7.00

 *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
        THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.69
 SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
 ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
 ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
 ASSUME FULL-FLOWING PIPELINE
 PIPE-FLOW VELOCITY(FEET/SEC.) =  15.34
 PIPE-FLOW(CFS) =     48.24
 PIPEFLOW TRAVEL TIME(MIN.) =   0.81    Tc(MIN.) =   8.97
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.659
 SUBAREA AREA(ACRES) =   55.30      SUBAREA RUNOFF(CFS) =  100.79
 TOTAL AREA(ACRES) =     98.47        PEAK FLOW RATE(CFS) =    180.74

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.57; 6HR = 2.39; 24HR = 4.88
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  132.50
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.67
  HALFSTREET FLOOD WIDTH(FEET) =   26.44
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.01
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.02
```

```
 LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20105.00 =  1642.79 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020105.0 TO NODE LR020106.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   2270.00  DOWNSTREAM(FEET) =   2230.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1238.14   CHANNEL SLOPE =  0.0323
 CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   3.30
 CHANNEL FLOW THRU SUBAREA(CFS) =    180.74
 FLOW VELOCITY(FEET/SEC.) =   9.30   FLOW DEPTH(FEET) =   2.11
 TRAVEL TIME(MIN.) =   2.22   Tc(MIN.) =  11.18
 LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20106.00 =  2880.93 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020106.0 TO NODE LR020106.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  11.18
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.329
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               A        2.42      0.86      1.00    46
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         A        7.44      0.98      0.70    32
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B       21.25      0.75      0.70    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B      127.72      0.61      1.00    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.64
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.95
 SUBAREA AREA(ACRES) =  158.83      SUBAREA RUNOFF(CFS) =  245.87
 EFFECTIVE AREA(ACRES) =    257.30   AREA-AVERAGED Fm(INCH/HR) =  0.61
 AREA-AVERAGED Fp(INCH/HR) =  0.65  AREA-AVERAGED Ap =  0.94
 TOTAL AREA(ACRES) =    257.30       PEAK FLOW RATE(CFS) =     397.33

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.57; 6HR = 2.39; 24HR = 4.88

****************************************************************************
 FLOW PROCESS FROM NODE LR020106.0 TO NODE LR020107.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   2230.00  DOWNSTREAM(FEET) =   2170.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1330.76   CHANNEL SLOPE =  0.0451
 CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
 CHANNEL FLOW THRU SUBAREA(CFS) =    397.33
 FLOW VELOCITY(FEET/SEC.) =   9.81   FLOW DEPTH(FEET) =   1.25
 TRAVEL TIME(MIN.) =   2.26   Tc(MIN.) =  13.44
```



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 LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20107.00 =  4211.69 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020107.0 TO NODE LR020107.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  13.44
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.085
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               A        2.55      0.86      1.00    46
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         A       12.67      0.98      0.70    32
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B       10.30      0.75      0.70    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B       66.90      0.61      1.00    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.93
 SUBAREA AREA(ACRES) =   92.42      SUBAREA RUNOFF(CFS) =  121.88
 EFFECTIVE AREA(ACRES) =    349.72   AREA-AVERAGED Fm(INCH/HR) =  0.61
 AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.93
 TOTAL AREA(ACRES) =    349.72       PEAK FLOW RATE(CFS) =     462.80

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.57; 6HR = 2.39; 24HR = 4.88

****************************************************************************
 FLOW PROCESS FROM NODE LR020107.0 TO NODE LR020108.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   2170.00  DOWNSTREAM(FEET) =   2095.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1995.70   CHANNEL SLOPE =  0.0376
 CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
 CHANNEL FLOW THRU SUBAREA(CFS) =    462.80
 FLOW VELOCITY(FEET/SEC.) =   9.80   FLOW DEPTH(FEET) =   1.44
 TRAVEL TIME(MIN.) =   3.40   Tc(MIN.) =  16.84
 LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20108.00 =  6207.39 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020108.0 TO NODE LR020108.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  16.84
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.822
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               A        3.92      0.86      1.00    46
 RESIDENTIAL
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  "2 DWELLINGS/ACRE"         A        0.86      0.98      0.70    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       16.85      0.98      0.60    32
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       25.39      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       10.75      0.75      0.60    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       87.64      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.68
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.87
  SUBAREA AREA(ACRES) =  145.41      SUBAREA RUNOFF(CFS) =  161.25
  EFFECTIVE AREA(ACRES) =    495.13   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =    495.13       PEAK FLOW RATE(CFS) =     541.10

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.57; 6HR = 2.39; 24HR = 4.88

****************************************************************************
  FLOW PROCESS FROM NODE LR020108.0 TO NODE LR020109.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2095.00  DOWNSTREAM(FEET) =   2020.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2023.91   CHANNEL SLOPE =  0.0371
  CHANNEL BASE(FEET) =   40.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    541.10
  FLOW VELOCITY(FEET/SEC.) =   9.46   FLOW DEPTH(FEET) =   1.34
  TRAVEL TIME(MIN.) =   3.57   Tc(MIN.) =  20.41
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20109.00 =  8231.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020109.0 TO NODE LR020109.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  20.41
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.624
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        2.81      0.86      1.00    46
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       27.06      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       26.94      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       35.77      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B      102.40      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.83
  SUBAREA AREA(ACRES) =  194.98      SUBAREA RUNOFF(CFS) =  184.16
  EFFECTIVE AREA(ACRES) =    690.11   AREA-AVERAGED Fm(INCH/HR) =  0.60
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  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.89
  TOTAL AREA(ACRES) =    690.11       PEAK FLOW RATE(CFS) =     636.91

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.57; 6HR = 2.39; 24HR = 4.88

****************************************************************************
  FLOW PROCESS FROM NODE LR020109.0 TO NODE LR020109.0 IS CODE =  71
----------------------------------------------------------------------------
  >>>>>PEAK FLOW RATE ESTIMATOR CHANGED TO UNIT-HYDROGRAPH METHOD<<<<<
  >>>>>USING TIME-OF-CONCENTRATION OF LONGEST FLOWPATH<<<<<
============================================================================
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.31;30M= 0.64;1H= 0.85;3H= 1.57;6H= 2.39;24H= 4.88
  S-GRAPH: VALLEY(DEV.)= 32.0%;VALLEY(UNDEV.)/DESERT= 68.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.34; LAG(HR) = 0.27; Fm(INCH/HR) = 0.60; Ybar = 0.65
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 1.00; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    690.11
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20109.00 =  8231.30 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0363; Lca/L=0.4,n=.0326; Lca/L=0.5,n=.0299;Lca/L=0.6,n=.0279
  TIME OF PEAK FLOW(HR) = 16.33  RUNOFF VOLUME(AF) =     108.28
  UNIT-HYDROGRAPH METHOD PEAK FLOW RATE(CFS) =    611.77
  TOTAL PEAK FLOW RATE(CFS) =    611.77 (SOURCE FLOW INCLUDED)
  RATIONAL METHOD PEAK FLOW RATE(CFS) =    636.91
   (UPSTREAM NODE PEAK FLOW RATE(CFS) =    636.91)
  PEAK FLOW RATE(CFS) USED =    636.91

****************************************************************************
  FLOW PROCESS FROM NODE LR020109.0 TO NODE LR020110.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2020.00  DOWNSTREAM(FEET) =   1960.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1927.24   CHANNEL SLOPE =  0.0311
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    636.91
  FLOW VELOCITY(FEET/SEC.) =  22.69   FLOW DEPTH(FEET) =   2.00
  TRAVEL TIME(MIN.) =   1.42   Tc(MIN.) =  21.82
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20110.00 = 10158.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020110.0 TO NODE LR020110.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.82
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.560
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        5.83      0.86      1.00    46
```

```
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       33.80      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       25.19      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        9.84      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       45.99      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.78
  SUBAREA AREA(ACRES) =  120.65
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.31;30M= 0.64;1H= 0.85;3H= 1.57;6H= 2.39;24H= 4.88
  S-GRAPH: VALLEY(DEV.)= 35.7%;VALLEY(UNDEV.)/DESERT= 64.3%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.36; LAG(HR) = 0.29; Fm(INCH/HR) = 0.59; Ybar = 0.64
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    810.76
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20110.00 = 10158.54 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0327; Lca/L=0.4,n=.0293; Lca/L=0.5,n=.0269;Lca/L=0.6,n=.0251
  TIME OF PEAK FLOW(HR) = 16.33  RUNOFF VOLUME(AF) =     128.23
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    696.68
  TOTAL AREA(ACRES) =    810.76       PEAK FLOW RATE(CFS) =     696.68

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.57; 6HR = 2.39; 24HR = 4.88

****************************************************************************
  FLOW PROCESS FROM NODE LR020110.0 TO NODE LR020111.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1960.00  DOWNSTREAM(FEET) =   1920.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   928.33   CHANNEL SLOPE =  0.0431
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    696.68
  FLOW VELOCITY(FEET/SEC.) =  26.12   FLOW DEPTH(FEET) =   1.93
  TRAVEL TIME(MIN.) =   0.59   Tc(MIN.) =  22.41
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20111.00 = 11086.87 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020111.0 TO NODE LR020111.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  22.41
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.535
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               A       28.59      0.86      1.00    46
  RESIDENTIAL
```



```
  "3-4 DWELLINGS/ACRE"       A       31.08      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       31.56      0.75      0.60    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       41.72      0.61      1.00    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        5.26      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.76
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.81
  SUBAREA AREA(ACRES) =  138.21
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.31;30M= 0.64;1H= 0.85;3H= 1.57;6H= 2.39;24H= 4.88
  S-GRAPH: VALLEY(DEV.)= 37.1%;VALLEY(UNDEV.)/DESERT= 62.9%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.37; LAG(HR) = 0.30; Fm(INCH/HR) = 0.60; Ybar = 0.65
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    948.97
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20111.00 = 11086.87 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0314; Lca/L=0.4,n=.0282; Lca/L=0.5,n=.0259;Lca/L=0.6,n=.0241
  TIME OF PEAK FLOW(HR) = 16.33  RUNOFF VOLUME(AF) =     148.48
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    794.56
  TOTAL AREA(ACRES) =    948.97       PEAK FLOW RATE(CFS) =     794.56

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.57; 6HR = 2.39; 24HR = 4.88

****************************************************************************
  FLOW PROCESS FROM NODE LR020111.0 TO NODE LR020112.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1920.00  DOWNSTREAM(FEET) =   1870.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1664.97   CHANNEL SLOPE =  0.0300
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    794.56
  FLOW VELOCITY(FEET/SEC.) =  23.88   FLOW DEPTH(FEET) =   2.28
  TRAVEL TIME(MIN.) =   1.16   Tc(MIN.) =  23.58
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20112.00 = 12751.84 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020112.0 TO NODE LR020112.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  23.58
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.489
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        8.51      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.54      0.75      0.60    56
```

```
  RESIDENTIAL
  ".4 DWELLING/ACRE"         A        3.29      0.98      0.90    32
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       75.85      0.75      0.90    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        7.12      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.76
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.88
  SUBAREA AREA(ACRES) =   95.31
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.31;30M= 0.64;1H= 0.85;3H= 1.57;6H= 2.39;24H= 4.88
  S-GRAPH: VALLEY(DEV.)= 34.6%;VALLEY(UNDEV.)/DESERT= 65.4%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.39; LAG(HR) = 0.31; Fm(INCH/HR) = 0.61; Ybar = 0.65
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.95; 30M = 0.95; 1HR = 0.95;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1044.28
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20112.00 = 12751.84 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0295; Lca/L=0.4,n=.0264; Lca/L=0.5,n=.0243;Lca/L=0.6,n=.0227
  TIME OF PEAK FLOW(HR) = 16.33  RUNOFF VOLUME(AF) =     160.70
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    831.23
  TOTAL AREA(ACRES) =   1044.28       PEAK FLOW RATE(CFS) =     831.23

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.57; 6HR = 2.39; 24HR = 4.88

****************************************************************************
  FLOW PROCESS FROM NODE LR020112.0 TO NODE LR020150.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1870.00  DOWNSTREAM(FEET) =   1850.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   907.32   CHANNEL SLOPE =  0.0220
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    831.23
  FLOW VELOCITY(FEET/SEC.) =  21.73   FLOW DEPTH(FEET) =   2.54
  TRAVEL TIME(MIN.) =   0.70   Tc(MIN.) =  24.27
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20150.00 = 13659.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020150.0 TO NODE LR020150.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  24.27
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.463
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.19      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        3.83      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
```



```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.74
  SUBAREA AREA(ACRES) =    8.02
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.31;30M= 0.64;1H= 0.85;3H= 1.57;6H= 2.39;24H= 4.88
  S-GRAPH: VALLEY(DEV.)= 34.7%;VALLEY(UNDEV.)/DESERT= 65.3%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.40; LAG(HR) = 0.32; Fm(INCH/HR) = 0.60; Ybar = 0.65
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.95; 30M = 0.95; 1HR = 0.95;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1052.30
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20150.00 = 13659.16 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0286; Lca/L=0.4,n=.0257; Lca/L=0.5,n=.0236;Lca/L=0.6,n=.0220
  TIME OF PEAK FLOW(HR) = 16.33  RUNOFF VOLUME(AF) =     162.06
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    816.43
  TOTAL AREA(ACRES) =   1052.30       PEAK FLOW RATE(CFS) =     831.23
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.57; 6HR = 2.39; 24HR = 4.88

****************************************************************************
  FLOW PROCESS FROM NODE LR020150.0 TO NODE LR020150.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020120.0 TO NODE LR020121.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   591.56
  ELEVATION DATA: UPSTREAM(FEET) =   3148.00  DOWNSTREAM(FEET) =   2920.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.975
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.355
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        5.75      0.61      1.00    66   10.98
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA RUNOFF(CFS) =      9.01
  TOTAL AREA(ACRES) =      5.75   PEAK FLOW RATE(CFS) =      9.01

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.57; 6HR = 2.39; 24HR = 4.88

****************************************************************************
  FLOW PROCESS FROM NODE LR020121.0 TO NODE LR020122.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
```

```
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2920.00  DOWNSTREAM(FEET) =   2860.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   401.18   CHANNEL SLOPE =  0.1496
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      9.01
  FLOW VELOCITY(FEET/SEC.) =   6.37   FLOW DEPTH(FEET) =   0.75
  TRAVEL TIME(MIN.) =   1.05   Tc(MIN.) =  12.03
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20122.00 =   992.74 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020122.0 TO NODE LR020122.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  12.03
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.230
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BROWSH"               B        6.02      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =    6.02      SUBAREA RUNOFF(CFS) =    8.75
  EFFECTIVE AREA(ACRES) =     11.77   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     11.77       PEAK FLOW RATE(CFS) =      17.12

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.57; 6HR = 2.39; 24HR = 4.88

****************************************************************************
  FLOW PROCESS FROM NODE LR020122.0 TO NODE LR020123.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2860.00  DOWNSTREAM(FEET) =   2800.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   404.41   CHANNEL SLOPE =  0.1484
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     17.12
  FLOW VELOCITY(FEET/SEC.) =   7.45   FLOW DEPTH(FEET) =   0.96
  TRAVEL TIME(MIN.) =   0.90   Tc(MIN.) =  12.93
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20123.00 =  1397.15 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020123.0 TO NODE LR020123.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  12.93
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.135
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
```



```
  "OPEN BROWSH"               B        5.11      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =    5.11      SUBAREA RUNOFF(CFS) =    6.99
  EFFECTIVE AREA(ACRES) =     16.88   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     16.88       PEAK FLOW RATE(CFS) =      23.10

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.57; 6HR = 2.39; 24HR = 4.88

****************************************************************************
  FLOW PROCESS FROM NODE LR020123.0 TO NODE LR020124.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2800.00  DOWNSTREAM(FEET) =   2720.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   734.74   CHANNEL SLOPE =  0.1089
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     23.10
  FLOW VELOCITY(FEET/SEC.) =   7.12   FLOW DEPTH(FEET) =   1.14
  TRAVEL TIME(MIN.) =   1.72   Tc(MIN.) =  14.65
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20124.00 =  2131.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020124.0 TO NODE LR020124.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  14.65
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.981
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BROWSH"               B       33.25      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =   33.25      SUBAREA RUNOFF(CFS) =   40.89
  EFFECTIVE AREA(ACRES) =     50.13   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     50.13       PEAK FLOW RATE(CFS) =      61.66

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.57; 6HR = 2.39; 24HR = 4.88

****************************************************************************
  FLOW PROCESS FROM NODE LR020124.0 TO NODE LR020125.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2720.00  DOWNSTREAM(FEET) =   2620.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   932.28   CHANNEL SLOPE =  0.1073
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
```

```
  CHANNEL FLOW THRU SUBAREA(CFS) =     61.66
  FLOW VELOCITY(FEET/SEC.) =   9.05   FLOW DEPTH(FEET) =   1.65
  TRAVEL TIME(MIN.) =   1.72   Tc(MIN.) =  16.37
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20125.00 =  3064.17 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020125.0 TO NODE LR020125.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  16.37
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.853
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       36.51      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =   36.51      SUBAREA RUNOFF(CFS) =   40.72
  EFFECTIVE AREA(ACRES) =     86.64   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     86.64       PEAK FLOW RATE(CFS) =      96.63

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.57; 6HR = 2.39; 24HR = 4.88

****************************************************************************
  FLOW PROCESS FROM NODE LR020125.0 TO NODE LR020126.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2620.00  DOWNSTREAM(FEET) =   2600.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1333.93   CHANNEL SLOPE =  0.0150
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   4.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     96.63
  FLOW VELOCITY(FEET/SEC.) =   4.84   FLOW DEPTH(FEET) =   2.83
  TRAVEL TIME(MIN.) =   4.59   Tc(MIN.) =  20.96
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20126.00 =  4398.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020126.0 TO NODE LR020126.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  20.96
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.598
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       60.59      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =   60.59      SUBAREA RUNOFF(CFS) =   53.64
  EFFECTIVE AREA(ACRES) =    147.23   AREA-AVERAGED Fm(INCH/HR) =  0.61
```



```
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    147.23       PEAK FLOW RATE(CFS) =     130.33

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.57; 6HR = 2.39; 24HR = 4.88

****************************************************************************
  FLOW PROCESS FROM NODE LR020126.0 TO NODE LR020127.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2600.00  DOWNSTREAM(FEET) =   2420.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1404.24   CHANNEL SLOPE =  0.1282
  CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    130.33
  FLOW VELOCITY(FEET/SEC.) =   8.82   FLOW DEPTH(FEET) =   0.69
  TRAVEL TIME(MIN.) =   2.65   Tc(MIN.) =  23.62
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20127.00 =  5802.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020127.0 TO NODE LR020127.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  23.62
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.487
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       45.37      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =   45.37      SUBAREA RUNOFF(CFS) =   35.66
  EFFECTIVE AREA(ACRES) =    192.60   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =    192.60       PEAK FLOW RATE(CFS) =     151.37

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.57; 6HR = 2.39; 24HR = 4.88

****************************************************************************
  FLOW PROCESS FROM NODE LR020127.0 TO NODE LR020128.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2420.00  DOWNSTREAM(FEET) =   2240.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1246.58   CHANNEL SLOPE =  0.1444
  CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    151.37
  FLOW VELOCITY(FEET/SEC.) =   8.42   FLOW DEPTH(FEET) =   0.58
  TRAVEL TIME(MIN.) =   2.47   Tc(MIN.) =  26.08
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20128.00 =  7048.92 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR020128.0 TO NODE LR020128.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  26.08
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.401
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       27.94      0.61      1.00    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        8.51      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.64
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.93
  SUBAREA AREA(ACRES) =   36.45      SUBAREA RUNOFF(CFS) =   26.52
  EFFECTIVE AREA(ACRES) =    229.05   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.62  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    229.05       PEAK FLOW RATE(CFS) =     162.97

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.57; 6HR = 2.39; 24HR = 4.88

****************************************************************************
  FLOW PROCESS FROM NODE LR020128.0 TO NODE LR020129.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2240.00  DOWNSTREAM(FEET) =   2120.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1393.78   CHANNEL SLOPE =  0.0861
  CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    162.97
  FLOW VELOCITY(FEET/SEC.) =   7.36   FLOW DEPTH(FEET) =   0.70
  TRAVEL TIME(MIN.) =   3.16   Tc(MIN.) =  29.24
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20129.00 =  8442.70 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020129.0 TO NODE LR020129.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  29.24
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.308
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       18.57      0.61      1.00    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       10.38      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.65
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.89
  SUBAREA AREA(ACRES) =   28.95      SUBAREA RUNOFF(CFS) =   18.94
  EFFECTIVE AREA(ACRES) =    258.00   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.62  AREA-AVERAGED Ap =  0.98
```



```
  TOTAL AREA(ACRES) =    258.00       PEAK FLOW RATE(CFS) =     162.97
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.57; 6HR = 2.39; 24HR = 4.88

****************************************************************************
  FLOW PROCESS FROM NODE LR020129.0 TO NODE LR020130.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2120.00  DOWNSTREAM(FEET) =   1995.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2018.40   CHANNEL SLOPE =  0.0619
  CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    162.97
  FLOW VELOCITY(FEET/SEC.) =   6.66   FLOW DEPTH(FEET) =   0.78
  TRAVEL TIME(MIN.) =   5.05   Tc(MIN.) =  34.29
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20130.00 = 10461.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020130.0 TO NODE LR020130.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  34.29
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.189
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       28.04      0.75      0.90    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       51.49      0.61      1.00    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       30.71      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.68
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.89
  SUBAREA AREA(ACRES) =  110.24      SUBAREA RUNOFF(CFS) =   58.07
  EFFECTIVE AREA(ACRES) =    368.24   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.64  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =    368.24       PEAK FLOW RATE(CFS) =     193.15

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.57; 6HR = 2.39; 24HR = 4.88

****************************************************************************
  FLOW PROCESS FROM NODE LR020130.0 TO NODE LR020148.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1995.00  DOWNSTREAM(FEET) =   1925.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1246.14   CHANNEL SLOPE =  0.0562
  CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    193.15
```

```
  FLOW VELOCITY(FEET/SEC.) =   6.89   FLOW DEPTH(FEET) =   0.88
  TRAVEL TIME(MIN.) =   3.01   Tc(MIN.) =  37.30
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20148.00 = 11707.24 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020148.0 TO NODE LR020148.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  37.30
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.131
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       19.93      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.65      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.89
  SUBAREA AREA(ACRES) =   20.58      SUBAREA RUNOFF(CFS) =    8.60
  EFFECTIVE AREA(ACRES) =    388.82   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.64  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =    388.82       PEAK FLOW RATE(CFS) =     193.15
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.57; 6HR = 2.39; 24HR = 4.88

****************************************************************************
  FLOW PROCESS FROM NODE LR020148.0 TO NODE LR020148.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  37.30
  RAINFALL INTENSITY(INCH/HR) =   1.13
  AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.64
  AREA-AVERAGED Ap =  0.95
  EFFECTIVE STREAM AREA(ACRES) =   388.82
  TOTAL STREAM AREA(ACRES) =   388.82
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    193.15

****************************************************************************
  FLOW PROCESS FROM NODE LR020140.0 TO NODE LR020141.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   823.61
  ELEVATION DATA: UPSTREAM(FEET) =   3000.00  DOWNSTREAM(FEET) =   2690.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.588
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.169
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
```



```
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        8.14      0.61      1.00    66   12.59
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA RUNOFF(CFS) =     11.39
  TOTAL AREA(ACRES) =      8.14   PEAK FLOW RATE(CFS) =     11.39

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.57; 6HR = 2.39; 24HR = 4.88

****************************************************************************
  FLOW PROCESS FROM NODE LR020141.0 TO NODE LR020142.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2690.00  DOWNSTREAM(FEET) =   2560.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   610.78   CHANNEL SLOPE =  0.2128
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     11.39
  FLOW VELOCITY(FEET/SEC.) =   7.73   FLOW DEPTH(FEET) =   0.77
  TRAVEL TIME(MIN.) =   1.32   Tc(MIN.) =  13.90
  LONGEST FLOWPATH FROM NODE  20140.00 TO NODE  20142.00 =  1434.39 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020142.0 TO NODE LR020142.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  13.90
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.044
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       15.44      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =   15.44      SUBAREA RUNOFF(CFS) =   19.87
  EFFECTIVE AREA(ACRES) =     23.58   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     23.58       PEAK FLOW RATE(CFS) =      30.34

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.57; 6HR = 2.39; 24HR = 4.88

****************************************************************************
  FLOW PROCESS FROM NODE LR020142.0 TO NODE LR020143.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2560.00  DOWNSTREAM(FEET) =   2420.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   771.13   CHANNEL SLOPE =  0.1816
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
```

```
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     30.34
  FLOW VELOCITY(FEET/SEC.) =   9.22   FLOW DEPTH(FEET) =   1.15
  TRAVEL TIME(MIN.) =   1.39   Tc(MIN.) =  15.30
  LONGEST FLOWPATH FROM NODE  20140.00 TO NODE  20143.00 =  2205.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020143.0 TO NODE LR020143.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  15.30
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.930
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       22.70      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA AREA(ACRES) =   22.70      SUBAREA RUNOFF(CFS) =   26.88
  EFFECTIVE AREA(ACRES) =     46.28   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     46.28       PEAK FLOW RATE(CFS) =      54.81

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.57; 6HR = 2.39; 24HR = 4.88

****************************************************************************
  FLOW PROCESS FROM NODE LR020143.0 TO NODE LR020144.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2420.00  DOWNSTREAM(FEET) =   2240.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1310.58   CHANNEL SLOPE =  0.1373
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     54.81
  FLOW VELOCITY(FEET/SEC.) =   9.64   FLOW DEPTH(FEET) =   1.51
  TRAVEL TIME(MIN.) =   2.27   Tc(MIN.) =  17.56
  LONGEST FLOWPATH FROM NODE  20140.00 TO NODE  20144.00 =  3516.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020144.0 TO NODE LR020144.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.56
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.776
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       61.27      0.61      1.00    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       11.25      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.63
```



```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.98
  SUBAREA AREA(ACRES) =   72.52      SUBAREA RUNOFF(CFS) =   75.27
  EFFECTIVE AREA(ACRES) =    118.80   AREA-AVERAGED Fm(INCH/HR) =  0.62
  AREA-AVERAGED Fp(INCH/HR) =  0.63  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    118.80       PEAK FLOW RATE(CFS) =     123.69

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.57; 6HR = 2.39; 24HR = 4.88

****************************************************************************
  FLOW PROCESS FROM NODE LR020144.0 TO NODE LR020145.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2240.00  DOWNSTREAM(FEET) =   2150.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1185.29   CHANNEL SLOPE =  0.0759
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.50
  CHANNEL FLOW THRU SUBAREA(CFS) =    123.69
  FLOW VELOCITY(FEET/SEC.) =   9.51   FLOW DEPTH(FEET) =   1.59
  TRAVEL TIME(MIN.) =   2.08   Tc(MIN.) =  19.64
  LONGEST FLOWPATH FROM NODE  20140.00 TO NODE  20145.00 =  4701.39 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020145.0 TO NODE LR020145.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  19.64
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.661
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       27.90      0.61      1.00    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       18.45      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.66
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.96
  SUBAREA AREA(ACRES) =   46.35      SUBAREA RUNOFF(CFS) =   42.70
  EFFECTIVE AREA(ACRES) =    165.15   AREA-AVERAGED Fm(INCH/HR) =  0.62
  AREA-AVERAGED Fp(INCH/HR) =  0.64  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    165.15       PEAK FLOW RATE(CFS) =     154.07

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.57; 6HR = 2.39; 24HR = 4.88

****************************************************************************
  FLOW PROCESS FROM NODE LR020145.0 TO NODE LR020146.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2150.00  DOWNSTREAM(FEET) =   2065.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1106.66   CHANNEL SLOPE =  0.0768
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
```

```
  CHANNEL FLOW THRU SUBAREA(CFS) =    154.07
  FLOW VELOCITY(FEET/SEC.) =  10.17   FLOW DEPTH(FEET) =   1.77
  TRAVEL TIME(MIN.) =   1.81   Tc(MIN.) =  21.45
  LONGEST FLOWPATH FROM NODE  20140.00 TO NODE  20146.00 =  5808.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020146.0 TO NODE LR020146.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.45
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.575
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        5.66      0.61      1.00    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       28.22      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.72
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.92
  SUBAREA AREA(ACRES) =   33.88      SUBAREA RUNOFF(CFS) =   27.81
  EFFECTIVE AREA(ACRES) =    199.03   AREA-AVERAGED Fm(INCH/HR) =  0.63
  AREA-AVERAGED Fp(INCH/HR) =  0.65  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    199.03       PEAK FLOW RATE(CFS) =     169.13

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.57; 6HR = 2.39; 24HR = 4.88

****************************************************************************
  FLOW PROCESS FROM NODE LR020146.0 TO NODE LR020147.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2065.00  DOWNSTREAM(FEET) =   1980.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1084.55   CHANNEL SLOPE =  0.0784
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    169.13
  FLOW VELOCITY(FEET/SEC.) =  10.52   FLOW DEPTH(FEET) =   1.85
  TRAVEL TIME(MIN.) =   1.72   Tc(MIN.) =  23.17
  LONGEST FLOWPATH FROM NODE  20140.00 TO NODE  20147.00 =  6892.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020147.0 TO NODE LR020147.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  23.17
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.504
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       15.70      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.90
```



```
  SUBAREA AREA(ACRES) =   15.70      SUBAREA RUNOFF(CFS) =   11.74
  EFFECTIVE AREA(ACRES) =    214.73   AREA-AVERAGED Fm(INCH/HR) =  0.63
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =    214.73       PEAK FLOW RATE(CFS) =     169.13
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.57; 6HR = 2.39; 24HR = 4.88

****************************************************************************
  FLOW PROCESS FROM NODE LR020147.0 TO NODE LR020148.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1980.00  DOWNSTREAM(FEET) =   1925.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   934.91   CHANNEL SLOPE =  0.0588
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    169.13
  FLOW VELOCITY(FEET/SEC.) =   9.48   FLOW DEPTH(FEET) =   1.99
  TRAVEL TIME(MIN.) =   1.64   Tc(MIN.) =  24.82
  LONGEST FLOWPATH FROM NODE  20140.00 TO NODE  20148.00 =  7827.51 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020148.0 TO NODE LR020148.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  24.82
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.444
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       14.97      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.90
  SUBAREA AREA(ACRES) =   14.97      SUBAREA RUNOFF(CFS) =   10.38
  EFFECTIVE AREA(ACRES) =    229.70   AREA-AVERAGED Fm(INCH/HR) =  0.64
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.96
  TOTAL AREA(ACRES) =    229.70       PEAK FLOW RATE(CFS) =     169.13
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.57; 6HR = 2.39; 24HR = 4.88

****************************************************************************
  FLOW PROCESS FROM NODE LR020148.0 TO NODE LR020148.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  24.82
  RAINFALL INTENSITY(INCH/HR) =   1.44
  AREA-AVERAGED Fm(INCH/HR) =  0.64
```

```
  AREA-AVERAGED Fp(INCH/HR) =  0.66
  AREA-AVERAGED Ap =  0.96
  EFFECTIVE STREAM AREA(ACRES) =   229.70
  TOTAL STREAM AREA(ACRES) =   229.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    169.13

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    193.15  37.30    1.131  0.64( 0.61) 0.95   388.8 LR020120.0
      2    169.13  24.82    1.444  0.66( 0.64) 0.96   229.7 LR020140.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    362.28  24.82    1.444  0.65( 0.62) 0.95   488.4 LR020140.0
      2    296.64  37.30    1.131  0.65( 0.62) 0.95   618.5 LR020120.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    362.28    Tc(MIN.) =    24.82
  EFFECTIVE AREA(ACRES) =   488.40   AREA-AVERAGED Fm(INCH/HR) =  0.62
  AREA-AVERAGED Fp(INCH/HR) =  0.65  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =    618.52
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20148.00 = 11707.24 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020148.0 TO NODE LR020149.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1925.00  DOWNSTREAM(FEET) =   1900.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   764.60   CHANNEL SLOPE =  0.0327
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    362.28
  FLOW VELOCITY(FEET/SEC.) =   9.00   FLOW DEPTH(FEET) =   2.64
  TRAVEL TIME(MIN.) =   1.42   Tc(MIN.) =  26.23
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20149.00 = 12471.84 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020149.0 TO NODE LR020149.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  26.23
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.396
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       20.34      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.62      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
```



```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.89
  SUBAREA AREA(ACRES) =   20.96      SUBAREA RUNOFF(CFS) =   13.77
  EFFECTIVE AREA(ACRES) =    509.36   AREA-AVERAGED Fm(INCH/HR) =  0.62
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =    639.48       PEAK FLOW RATE(CFS) =     362.28
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.57; 6HR = 2.39; 24HR = 4.88

****************************************************************************
  FLOW PROCESS FROM NODE LR020149.0 TO NODE LR020150.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1900.00  DOWNSTREAM(FEET) =   1850.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1212.57   CHANNEL SLOPE =  0.0412
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    362.28
  FLOW VELOCITY(FEET/SEC.) =   9.78   FLOW DEPTH(FEET) =   2.48
  TRAVEL TIME(MIN.) =   2.07   Tc(MIN.) =  28.30
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20150.00 = 13684.41 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020150.0 TO NODE LR020150.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  28.30
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.334
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        8.58      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.10      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.90
  SUBAREA AREA(ACRES) =    8.68      SUBAREA RUNOFF(CFS) =    5.18
  EFFECTIVE AREA(ACRES) =    518.04   AREA-AVERAGED Fm(INCH/HR) =  0.62
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =    648.16       PEAK FLOW RATE(CFS) =     362.28
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.57; 6HR = 2.39; 24HR = 4.88

****************************************************************************
  FLOW PROCESS FROM NODE LR020150.0 TO NODE LR020150.0 IS CODE =  71
----------------------------------------------------------------------------
  >>>>>PEAK FLOW RATE ESTIMATOR CHANGED TO UNIT-HYDROGRAPH METHOD<<<<<
  >>>>>USING TIME-OF-CONCENTRATION OF LONGEST FLOWPATH<<<<<
============================================================================
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.31;30M= 0.64;1H= 0.85;3H= 1.57;6H= 2.39;24H= 4.88
```

```
  S-GRAPH: VALLEY(DEV.)=  7.9%;VALLEY(UNDEV.)/DESERT= 92.1%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.68; LAG(HR) = 0.55; Fm(INCH/HR) = 0.62; Ybar = 0.67
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 1.00; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    648.16
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20150.00 = 13684.41 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0568; Lca/L=0.4,n=.0510; Lca/L=0.5,n=.0468;Lca/L=0.6,n=.0437
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =      95.27
  UNIT-HYDROGRAPH METHOD PEAK FLOW RATE(CFS) =    341.84
  TOTAL PEAK FLOW RATE(CFS) =    341.84 (SOURCE FLOW INCLUDED)
  RATIONAL METHOD PEAK FLOW RATE(CFS) =    362.28
   (UPSTREAM NODE PEAK FLOW RATE(CFS) =    362.28)
  PEAK FLOW RATE(CFS) USED =    362.28

****************************************************************************
  FLOW PROCESS FROM NODE LR020150.0 TO NODE LR020150.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =      362.28    Tc(MIN.) =  40.99
  AREA-AVERAGED Fm(INCH/HR) =  0.62    Ybar = 0.67
  TOTAL AREA(ACRES) =     648.16
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20150.00 = 13684.41 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =      831.23    Tc(MIN.) =  24.27
  AREA-AVERAGED Fm(INCH/HR) =  0.60    Ybar = 0.65
  TOTAL AREA(ACRES) =    1052.30
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20150.00 = 13659.16 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.31;30M= 0.64;1H= 0.85;3H= 1.57;6H= 2.39;24H= 4.88
  S-GRAPH: VALLEY(DEV.)= 24.5%;VALLEY(UNDEV.)/DESERT= 75.5%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.68; LAG(HR) = 0.55; Fm(INCH/HR) = 0.61; Ybar = 0.66
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.92; 30M = 0.92; 1HR = 0.92;
  3HR = 0.99; 6HR = 0.99; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1700.46
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20150.00 = 13684.41 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0568; Lca/L=0.4,n=.0510; Lca/L=0.5,n=.0468;Lca/L=0.6,n=.0437
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     255.28
  PEAK FLOW RATE(CFS) =     864.28

****************************************************************************
  FLOW PROCESS FROM NODE LR020150.0 TO NODE LR020150.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
```



```
  FLOW PROCESS FROM NODE LR020150.0 TO NODE LR020151.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1850.00  DOWNSTREAM(FEET) =   1785.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1753.77   CHANNEL SLOPE =  0.0371
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    864.28
  FLOW VELOCITY(FEET/SEC.) =  26.41   FLOW DEPTH(FEET) =   2.26
  TRAVEL TIME(MIN.) =   1.11   Tc(MIN.) =  42.10
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20151.00 = 15438.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020151.0 TO NODE LR020151.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  42.10
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.051
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       24.58      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.90
  SUBAREA AREA(ACRES) =   24.58
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.31;30M= 0.64;1H= 0.85;3H= 1.57;6H= 2.39;24H= 4.88
  S-GRAPH: VALLEY(DEV.)= 24.1%;VALLEY(UNDEV.)/DESERT= 75.9%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.70; LAG(HR) = 0.56; Fm(INCH/HR) = 0.61; Ybar = 0.66
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.92; 30M = 0.92; 1HR = 0.92;
  3HR = 0.99; 6HR = 0.99; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1725.04
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20151.00 = 15438.18 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0526; Lca/L=0.4,n=.0471; Lca/L=0.5,n=.0433;Lca/L=0.6,n=.0404
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     258.29
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    861.86
  TOTAL AREA(ACRES) =   1725.04       PEAK FLOW RATE(CFS) =     864.28
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.57; 6HR = 2.39; 24HR = 4.88

****************************************************************************
  FLOW PROCESS FROM NODE LR020151.0 TO NODE LR020151.0 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20151.DNA
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =   1725.04  TC(MIN.) =     42.10
```

AREA-AVERAGED Fm(INCH/HR)= 0.61 Ybar = 0.66
PEAK FLOW RATE(CFS) = 864.28

==========

==========

END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                          San Bernardino County
                    Transportation/ Flood Control Department

                          Water Resources Division

 ************************ DESCRIPTION OF STUDY *************************
* LR0202ZZ                                                             *
* 10- Year Storm                                                       *
*                                                                      *
 ************************************************************************

  FILE NAME: LR0202ZZ.Z10
  TIME/DATE OF STUDY: 09:58 02/22/2006
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 0.8000

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)     SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
```



```
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


 ************************************************************************
  FLOW PROCESS FROM NODE LR020200.0 TO NODE LR020201.0 IS CODE =  21
 ------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
 ========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   508.83
  ELEVATION DATA: UPSTREAM(FEET) =   1945.00  DOWNSTREAM(FEET) =   1935.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.936
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.222
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        4.64      0.98      0.60    32   10.94
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =      6.83
  TOTAL AREA(ACRES) =      4.64   PEAK FLOW RATE(CFS) =      6.83

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

 ************************************************************************
  FLOW PROCESS FROM NODE LR020201.0 TO NODE LR020202.0 IS CODE =  92
 ------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
 ========================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1935.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1930.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   620.72
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
```

```
 MAXIMUM DEPTH(FEET) =   1.00
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.878
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        6.32      0.98      0.60    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     10.51
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.92
 AVERAGE FLOW DEPTH(FEET) =   0.55   FLOOD WIDTH(FEET) =   26.37
 "V" GUTTER FLOW TRAVEL TIME(MIN.) =   3.54   Tc(MIN.) =  14.47
 SUBAREA AREA(ACRES) =    6.32       SUBAREA RUNOFF(CFS) =    7.35
 EFFECTIVE AREA(ACRES) =   10.96     AREA-AVERAGED Fm(INCH/HR) =   0.59
 AREA-AVERAGED Fp(INCH/HR) =   0.98  AREA-AVERAGED Ap =   0.60
 TOTAL AREA(ACRES) =     10.96         PEAK FLOW RATE(CFS) =      12.75

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

 END OF SUBAREA "V" GUTTER HYDRAULICS:
 DEPTH(FEET) =  0.57   FLOOD WIDTH(FEET) =   29.36
 FLOW VELOCITY(FEET/SEC.) =   2.97   DEPTH*VELOCITY(FT*FT/SEC) =   1.70
 LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20202.00 =  1129.55 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020202.0 TO NODE LR020203.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1930.00  DOWNSTREAM ELEVATION(FEET) = 1910.00
 STREET LENGTH(FEET) =   369.50   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 32.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.76

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      18.89
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.41
   HALFSTREET FLOOD WIDTH(FEET) =   12.82
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.15
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.14
 STREET FLOW TRAVEL TIME(MIN.) =   1.20   Tc(MIN.) =  15.67
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.790
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
```



```
 "3-4 DWELLINGS/ACRE"       A       11.02      0.98      0.60    32
 MOBILE HOME PARK           A        0.23      0.98      0.25    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.59
 SUBAREA AREA(ACRES) =   11.25      SUBAREA RUNOFF(CFS) =   12.28
 EFFECTIVE AREA(ACRES) =     22.21    AREA-AVERAGED Fm(INCH/HR) =  0.58
 AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =     22.21        PEAK FLOW RATE(CFS) =      24.17

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.44   HALFSTREET FLOOD WIDTH(FEET) =  14.23
 FLOW VELOCITY(FEET/SEC.) =  5.46   DEPTH*VELOCITY(FT*FT/SEC.) =   2.42
 LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20203.00 =  1499.05 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020203.0 TO NODE LR020204.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1910.00  DOWNSTREAM ELEVATION(FEET) = 1895.00
 STREET LENGTH(FEET) =   418.06   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 32.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      31.75
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.51
   HALFSTREET FLOOD WIDTH(FEET) =   17.35
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.96
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.51
 STREET FLOW TRAVEL TIME(MIN.) =   1.40   Tc(MIN.) =  17.07
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.701
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        6.00      0.98      0.60    32
 MOBILE HOME PARK           A        6.97      0.98      0.25    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.41
 SUBAREA AREA(ACRES) =   12.97      SUBAREA RUNOFF(CFS) =   15.16
 EFFECTIVE AREA(ACRES) =     35.18    AREA-AVERAGED Fm(INCH/HR) =  0.52
 AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.53
 TOTAL AREA(ACRES) =     35.18        PEAK FLOW RATE(CFS) =      37.53
```

```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.53   HALFSTREET FLOOD WIDTH(FEET) =  18.52
  FLOW VELOCITY(FEET/SEC.) =  5.18   DEPTH*VELOCITY(FT*FT/SEC.) =   2.74
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20204.00 =  1917.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020204.0 TO NODE LR020205.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1895.00  DOWNSTREAM ELEVATION(FEET) = 1875.00
  STREET LENGTH(FEET) =   555.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      46.60
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.56
    HALFSTREET FLOOD WIDTH(FEET) =   20.24
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.43
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.06
  STREET FLOW TRAVEL TIME(MIN.) =   1.70   Tc(MIN.) =  18.78
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.606
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        8.31      0.98      0.60    32
  MOBILE HOME PARK           A        8.55      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.42
  SUBAREA AREA(ACRES) =   16.86      SUBAREA RUNOFF(CFS) =   18.12
  EFFECTIVE AREA(ACRES) =     52.04    AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.49
  TOTAL AREA(ACRES) =     52.04        PEAK FLOW RATE(CFS) =      52.67

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.58   HALFSTREET FLOOD WIDTH(FEET) =  21.18
  FLOW VELOCITY(FEET/SEC.) =  5.63   DEPTH*VELOCITY(FT*FT/SEC.) =   3.28
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20205.00 =  2472.11 FEET.

****************************************************************************
```



```
  FLOW PROCESS FROM NODE LR020205.0 TO NODE LR020206.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1875.00  DOWNSTREAM ELEVATION(FEET) = 1855.00
  STREET LENGTH(FEET) =   568.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      56.01
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.59
    HALFSTREET FLOOD WIDTH(FEET) =   21.80
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.66
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.37
  STREET FLOW TRAVEL TIME(MIN.) =   1.67   Tc(MIN.) =  20.45
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.526
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A        4.58      0.98      0.25    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.65      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.34
  SUBAREA AREA(ACRES) =    6.23      SUBAREA RUNOFF(CFS) =    6.68
  EFFECTIVE AREA(ACRES) =     58.27    AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.48
  TOTAL AREA(ACRES) =     58.27        PEAK FLOW RATE(CFS) =      55.60

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.59   HALFSTREET FLOOD WIDTH(FEET) =  21.73
  FLOW VELOCITY(FEET/SEC.) =  5.66   DEPTH*VELOCITY(FT*FT/SEC.) =   3.36
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20206.00 =  3040.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020206.0 TO NODE LR020214.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1855.00  DOWNSTREAM ELEVATION(FEET) = 1840.00
  STREET LENGTH(FEET) =   411.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00
```

```
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.83

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      56.78
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.59
    HALFSTREET FLOOD WIDTH(FEET) =   21.80
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.74
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.41
  STREET FLOW TRAVEL TIME(MIN.) =   1.19   Tc(MIN.) =  21.64
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.475
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A        1.68      0.98      0.25    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.62      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.34
  SUBAREA AREA(ACRES) =    2.30      SUBAREA RUNOFF(CFS) =    2.36
  EFFECTIVE AREA(ACRES) =     60.57    AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.47
  TOTAL AREA(ACRES) =     60.57        PEAK FLOW RATE(CFS) =      55.60
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.59   HALFSTREET FLOOD WIDTH(FEET) =  21.65
  FLOW VELOCITY(FEET/SEC.) =  5.70   DEPTH*VELOCITY(FT*FT/SEC.) =   3.37
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20214.00 =  3451.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020214.0 TO NODE LR020214.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  21.64
  RAINFALL INTENSITY(INCH/HR) =   1.48
  AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.97
  AREA-AVERAGED Ap =  0.47
  EFFECTIVE STREAM AREA(ACRES) =    60.57
  TOTAL STREAM AREA(ACRES) =    60.57
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     55.60

****************************************************************************
  FLOW PROCESS FROM NODE LR020210.0 TO NODE LR020211.0 IS CODE =  21
```



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----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   940.61
  ELEVATION DATA: UPSTREAM(FEET) =   1875.00  DOWNSTREAM(FEET) =   1850.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.163
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.988
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        7.95      0.98      0.60    32   13.16
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     10.04
  TOTAL AREA(ACRES) =      7.95   PEAK FLOW RATE(CFS) =     10.04

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020211.0 TO NODE LR020212.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1850.00  DOWNSTREAM ELEVATION(FEET) = 1846.00
  STREET LENGTH(FEET) =   247.17   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      13.23
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.42
    HALFSTREET FLOOD WIDTH(FEET) =   14.60
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.94
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.23
  STREET FLOW TRAVEL TIME(MIN.) =   1.40   Tc(MIN.) =  14.56
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.871
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        4.82      0.98      0.60    32
  MOBILE HOME PARK           A        0.55      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
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  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.56
  SUBAREA AREA(ACRES) =    5.37      SUBAREA RUNOFF(CFS) =    6.38
  EFFECTIVE AREA(ACRES) =     13.32    AREA-AVERAGED Fm(INCH/HR) =  0.57
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.59
  TOTAL AREA(ACRES) =     13.32        PEAK FLOW RATE(CFS) =      15.58

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.44   HALFSTREET FLOOD WIDTH(FEET) =  15.54
  FLOW VELOCITY(FEET/SEC.) =  3.08   DEPTH*VELOCITY(FT*FT/SEC.) =   1.34
  LONGEST FLOWPATH FROM NODE  20210.00 TO NODE  20212.00 =  1187.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020212.0 TO NODE LR020213.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1846.00  DOWNSTREAM ELEVATION(FEET) = 1843.00
  STREET LENGTH(FEET) =   253.21   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      19.04
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.48
    HALFSTREET FLOOD WIDTH(FEET) =   17.88
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.87
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.39
  STREET FLOW TRAVEL TIME(MIN.) =   1.47   Tc(MIN.) =  16.03
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.766
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        2.35      0.98      0.60    32
  MOBILE HOME PARK           A        3.23      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
  SUBAREA AREA(ACRES) =    5.58      SUBAREA RUNOFF(CFS) =    6.92
  EFFECTIVE AREA(ACRES) =     18.90    AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.53
  TOTAL AREA(ACRES) =     18.90        PEAK FLOW RATE(CFS) =      21.25

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43
```



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  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.50   HALFSTREET FLOOD WIDTH(FEET) =  18.00
  FLOW VELOCITY(FEET/SEC.) =  3.00   DEPTH*VELOCITY(FT*FT/SEC.) =   1.49
  LONGEST FLOWPATH FROM NODE  20210.00 TO NODE  20213.00 =  1440.99 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020213.0 TO NODE LR020214.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1843.00  DOWNSTREAM ELEVATION(FEET) = 1840.00
  STREET LENGTH(FEET) =   294.25   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      22.61
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.51
    HALFSTREET FLOOD WIDTH(FEET) =   18.69
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.93
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.51
  STREET FLOW TRAVEL TIME(MIN.) =   1.67   Tc(MIN.) =  17.71
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.664
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.63      0.98      0.60    32
  MOBILE HOME PARK           A        1.65      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.35
  SUBAREA AREA(ACRES) =    2.28      SUBAREA RUNOFF(CFS) =    2.72
  EFFECTIVE AREA(ACRES) =     21.18    AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.51
  TOTAL AREA(ACRES) =     21.18        PEAK FLOW RATE(CFS) =      22.23

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.51   HALFSTREET FLOOD WIDTH(FEET) =  18.62
  FLOW VELOCITY(FEET/SEC.) =  2.90   DEPTH*VELOCITY(FT*FT/SEC.) =   1.49
  LONGEST FLOWPATH FROM NODE  20210.00 TO NODE  20214.00 =  1735.24 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020214.0 TO NODE LR020214.0 IS CODE =   1
----------------------------------------------------------------------------
```

```
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  17.71
  RAINFALL INTENSITY(INCH/HR) =   1.66
  AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.98
  AREA-AVERAGED Ap =  0.51
  EFFECTIVE STREAM AREA(ACRES) =    21.18
  TOTAL STREAM AREA(ACRES) =    21.18
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     22.23

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     55.60  21.64    1.475  0.97( 0.46) 0.47    60.6 LR020200.0
      2     22.23  17.71    1.664  0.98( 0.50) 0.51    21.2 LR020210.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     76.19  17.71    1.664  0.97( 0.47) 0.48    70.7 LR020210.0
      2     74.24  21.64    1.475  0.97( 0.47) 0.48    81.8 LR020200.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     76.19    Tc(MIN.) =    17.71
  EFFECTIVE AREA(ACRES) =    70.74   AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.48
  TOTAL AREA(ACRES) =     81.75
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20214.00 =  3451.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020214.0 TO NODE LR020215.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) = 1840.00  DOWNSTREAM ELEVATION(FEET) = 1793.00
  STREET LENGTH(FEET) =  1205.58   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.82

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      95.50
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
```



```
    STREET FLOW DEPTH(FEET) =  0.68
    HALFSTREET FLOOD WIDTH(FEET) =   27.25
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.69
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.58
  STREET FLOW TRAVEL TIME(MIN.) =   3.00   Tc(MIN.) =  20.71
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.515
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       18.86      0.98      0.60    32
  MOBILE HOME PARK           A       19.95      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.42
  SUBAREA AREA(ACRES) =   38.81      SUBAREA RUNOFF(CFS) =   38.59
  EFFECTIVE AREA(ACRES) =    109.55    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.46
  TOTAL AREA(ACRES) =    120.56        PEAK FLOW RATE(CFS) =     104.98

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.70   HALFSTREET FLOOD WIDTH(FEET) =  29.13
  FLOW VELOCITY(FEET/SEC.) =  6.85   DEPTH*VELOCITY(FT*FT/SEC.) =   4.82
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20215.00 =  4656.69 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020215.0 TO NODE LR020216.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) = 1793.00  DOWNSTREAM ELEVATION(FEET) = 1740.00
  STREET LENGTH(FEET) =  1725.28   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     124.70
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.77
    HALFSTREET FLOOD WIDTH(FEET) =   35.53
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.41
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.92
  STREET FLOW TRAVEL TIME(MIN.) =   4.49   Tc(MIN.) =  25.20
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.346
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
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  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       24.17      0.98      0.60    32
  SCHOOL                     A        9.62      0.98      0.60    32
  MOBILE HOME PARK           A       14.92      0.98      0.25    32
  COMMERCIAL                 A        0.89      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.13      0.75      0.60    56
  COMMERCIAL                 B        0.31      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.48
  SUBAREA AREA(ACRES) =   50.04      SUBAREA RUNOFF(CFS) =   39.42
  EFFECTIVE AREA(ACRES) =    159.59    AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.47
  TOTAL AREA(ACRES) =    170.60        PEAK FLOW RATE(CFS) =     127.81

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.77   HALFSTREET FLOOD WIDTH(FEET) =  36.00
  FLOW VELOCITY(FEET/SEC.) =  6.45   DEPTH*VELOCITY(FT*FT/SEC.) =   4.99
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20216.00 =  6381.97 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020216.0 TO NODE LR020232.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1740.00  DOWNSTREAM ELEVATION(FEET) = 1739.00
  STREET LENGTH(FEET) =  1052.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     132.02
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.28
    HALFSTREET FLOOD WIDTH(FEET) =   62.66
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.87
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.40
  STREET FLOW TRAVEL TIME(MIN.) =   9.36   Tc(MIN.) =  34.56
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.114
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A        0.63      0.98      0.25    32
  COMMERCIAL                 B        1.46      0.75      0.10    56
  MOBILE HOME PARK           B        4.91      0.75      0.25    56
```



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  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.10      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.76
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.36
  SUBAREA AREA(ACRES) =   11.10      SUBAREA RUNOFF(CFS) =    8.41
  EFFECTIVE AREA(ACRES) =    170.69    AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.96  AREA-AVERAGED Ap =  0.46
  TOTAL AREA(ACRES) =    181.70        PEAK FLOW RATE(CFS) =     127.81
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.27   HALFSTREET FLOOD WIDTH(FEET) =  61.99
  FLOW VELOCITY(FEET/SEC.) =  1.86   DEPTH*VELOCITY(FT*FT/SEC.) =   2.35

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 1.07
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.51
  PIPE-FLOW(CFS) =     55.91
  PIPEFLOW TRAVEL TIME(MIN.) =   4.99    Tc(MIN.) =  30.19
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.208
  SUBAREA AREA(ACRES) =   11.10      SUBAREA RUNOFF(CFS) =    9.35
  TOTAL AREA(ACRES) =    181.70        PEAK FLOW RATE(CFS) =    127.81
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   71.91
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.06
    HALFSTREET FLOOD WIDTH(FEET) =   51.61
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.59
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.68
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20232.00 =  7433.97 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020232.0 TO NODE LR020232.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  30.19
  RAINFALL INTENSITY(INCH/HR) =   1.21
  AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.96
  AREA-AVERAGED Ap =  0.46
  EFFECTIVE STREAM AREA(ACRES) =   170.69
  TOTAL STREAM AREA(ACRES) =   181.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    127.81
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****************************************************************************
  FLOW PROCESS FROM NODE LR020220.0 TO NODE LR020221.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   598.74
  ELEVATION DATA: UPSTREAM(FEET) =   1935.00  DOWNSTREAM(FEET) =   1925.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.057
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.095
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        5.11      0.98      0.60    32   12.06
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =      6.95
  TOTAL AREA(ACRES) =      5.11   PEAK FLOW RATE(CFS) =      6.95

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020221.0 TO NODE LR020222.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1925.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1915.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   551.44
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.901
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        5.86      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     10.42
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.33
  AVERAGE FLOW DEPTH(FEET) =   0.50   FLOOD WIDTH(FEET) =   20.40
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   2.12   Tc(MIN.) =  14.18
  SUBAREA AREA(ACRES) =    5.86       SUBAREA RUNOFF(CFS) =    6.94
  EFFECTIVE AREA(ACRES) =   10.97     AREA-AVERAGED Fm(INCH/HR) =   0.59
  AREA-AVERAGED Fp(INCH/HR) =   0.98  AREA-AVERAGED Ap =   0.60
  TOTAL AREA(ACRES) =     10.97         PEAK FLOW RATE(CFS) =      12.99

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43
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  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.52   FLOOD WIDTH(FEET) =   23.54
  FLOW VELOCITY(FEET/SEC.) =   4.34   DEPTH*VELOCITY(FT*FT/SEC) =   2.28
  LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20222.00 =  1150.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020222.0 TO NODE LR020223.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1915.00  DOWNSTREAM ELEVATION(FEET) = 1905.00
  STREET LENGTH(FEET) =   354.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.82

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      19.05
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.43
    HALFSTREET FLOOD WIDTH(FEET) =   15.07
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.99
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.70
  STREET FLOW TRAVEL TIME(MIN.) =   1.48   Tc(MIN.) =  15.66
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.791
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       11.15      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   11.15      SUBAREA RUNOFF(CFS) =   12.10
  EFFECTIVE AREA(ACRES) =     22.12    AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     22.12        PEAK FLOW RATE(CFS) =      24.01

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.46   HALFSTREET FLOOD WIDTH(FEET) =  16.55
  FLOW VELOCITY(FEET/SEC.) =  4.20   DEPTH*VELOCITY(FT*FT/SEC.) =   1.92
  LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20223.00 =  1504.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020223.0 TO NODE LR020224.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
```

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==========================================================================
  UPSTREAM ELEVATION(FEET) = 1905.00  DOWNSTREAM ELEVATION(FEET) = 1895.00
  STREET LENGTH(FEET) =   253.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.74

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      28.23
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.46
    HALFSTREET FLOOD WIDTH(FEET) =   16.48
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.98
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.27
  STREET FLOW TRAVEL TIME(MIN.) =   0.85   Tc(MIN.) =  16.51
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.735
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A        2.51      0.98      0.25    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        4.90      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.48
  SUBAREA AREA(ACRES) =    7.41      SUBAREA RUNOFF(CFS) =    8.44
  EFFECTIVE AREA(ACRES) =     29.53    AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.57
  TOTAL AREA(ACRES) =     29.53        PEAK FLOW RATE(CFS) =      31.34

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.47   HALFSTREET FLOOD WIDTH(FEET) =  17.18
  FLOW VELOCITY(FEET/SEC.) =  5.11   DEPTH*VELOCITY(FT*FT/SEC.) =   2.40
  LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20224.00 =  1757.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020224.0 TO NODE LR020225.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
==========================================================================
  UPSTREAM ELEVATION(FEET) = 1895.00  DOWNSTREAM ELEVATION(FEET) = 1885.00
  STREET LENGTH(FEET) =   323.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
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  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.80

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      36.71
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.51
    HALFSTREET FLOOD WIDTH(FEET) =   18.26
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.96
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.51
  STREET FLOW TRAVEL TIME(MIN.) =   1.09   Tc(MIN.) =  17.59
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.670
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A        3.70      0.98      0.25    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        6.13      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.47
  SUBAREA AREA(ACRES) =    9.83      SUBAREA RUNOFF(CFS) =   10.74
  EFFECTIVE AREA(ACRES) =     39.36    AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.54
  TOTAL AREA(ACRES) =     39.36        PEAK FLOW RATE(CFS) =      40.35

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.52   HALFSTREET FLOOD WIDTH(FEET) =  18.87
  FLOW VELOCITY(FEET/SEC.) =  5.14   DEPTH*VELOCITY(FT*FT/SEC.) =   2.66
  LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20225.00 =  2080.68 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020225.0 TO NODE LR020226.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
==========================================================================
  UPSTREAM ELEVATION(FEET) = 1885.00  DOWNSTREAM ELEVATION(FEET) = 1875.00
  STREET LENGTH(FEET) =   288.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.77

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      45.50
    ***STREET FLOWING FULL***
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  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.53
  HALFSTREET FLOOD WIDTH(FEET) =   19.30
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.56
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.93
 STREET FLOW TRAVEL TIME(MIN.) =   0.86   Tc(MIN.) =  18.46
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.623
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        2.52      0.98      0.60    32
 MOBILE HOME PARK           A        6.40      0.98      0.25    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.35
 SUBAREA AREA(ACRES) =    8.92      SUBAREA RUNOFF(CFS) =   10.30
 EFFECTIVE AREA(ACRES) =     48.28    AREA-AVERAGED Fm(INCH/HR) =  0.50
 AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.51
 TOTAL AREA(ACRES) =     48.28        PEAK FLOW RATE(CFS) =      48.97

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.54   HALFSTREET FLOOD WIDTH(FEET) =  19.78
 FLOW VELOCITY(FEET/SEC.) =  5.72   DEPTH*VELOCITY(FT*FT/SEC.) =   3.06
 LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20226.00 =  2369.18 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020226.0 TO NODE LR020227.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1875.00  DOWNSTREAM ELEVATION(FEET) = 1863.00
 STREET LENGTH(FEET) =   404.50   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.81

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      56.05
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.57
   HALFSTREET FLOOD WIDTH(FEET) =   21.37
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.68
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.22
 STREET FLOW TRAVEL TIME(MIN.) =   1.19   Tc(MIN.) =  19.64
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.563
 SUBAREA LOSS RATE DATA(AMC  II):
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  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 MOBILE HOME PARK           A        9.70      0.98      0.25    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        3.00      0.98      0.60    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.33
 SUBAREA AREA(ACRES) =   12.70      SUBAREA RUNOFF(CFS) =   14.16
 EFFECTIVE AREA(ACRES) =     60.98    AREA-AVERAGED Fm(INCH/HR) =  0.46
 AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.47
 TOTAL AREA(ACRES) =     60.98        PEAK FLOW RATE(CFS) =      60.55

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.58   HALFSTREET FLOOD WIDTH(FEET) =  21.98
 FLOW VELOCITY(FEET/SEC.) =  5.82   DEPTH*VELOCITY(FT*FT/SEC.) =   3.38
 LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20227.00 =  2773.68 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020227.0 TO NODE LR020228.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1863.00  DOWNSTREAM ELEVATION(FEET) = 1848.00
 STREET LENGTH(FEET) =   374.50   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.74

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      65.48
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.57
   HALFSTREET FLOOD WIDTH(FEET) =   21.43
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.60
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.75
 STREET FLOW TRAVEL TIME(MIN.) =   0.95   Tc(MIN.) =  20.59
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.520
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 MOBILE HOME PARK           A        4.46      0.98      0.25    32
 PUBLIC PARK                A        4.98      0.98      0.85    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        1.96      0.98      0.60    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.57
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  SUBAREA AREA(ACRES) =   11.40      SUBAREA RUNOFF(CFS) =    9.87
  EFFECTIVE AREA(ACRES) =     72.38    AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.49
  TOTAL AREA(ACRES) =     72.38        PEAK FLOW RATE(CFS) =      68.03

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.57   HALFSTREET FLOOD WIDTH(FEET) =  21.68
  FLOW VELOCITY(FEET/SEC.) =  6.72   DEPTH*VELOCITY(FT*FT/SEC.) =   3.85
  LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20228.00 =  3148.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020228.0 TO NODE LR020229.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1848.00  DOWNSTREAM ELEVATION(FEET) = 1826.00
  STREET LENGTH(FEET) =   510.53   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.73

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      74.49
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.58
    HALFSTREET FLOOD WIDTH(FEET) =   22.16
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.06
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.12
  STREET FLOW TRAVEL TIME(MIN.) =   1.21   Tc(MIN.) =  21.79
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.469
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A        5.30      0.98      0.25    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        4.30      0.98      0.60    32
  PUBLIC PARK                A        6.33      0.98      0.85    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.58
  SUBAREA AREA(ACRES) =   15.93      SUBAREA RUNOFF(CFS) =   12.91
  EFFECTIVE AREA(ACRES) =     88.31    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =     88.31        PEAK FLOW RATE(CFS) =      77.61

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43
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  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.59   HALFSTREET FLOOD WIDTH(FEET) =  22.47
  FLOW VELOCITY(FEET/SEC.) =  7.17   DEPTH*VELOCITY(FT*FT/SEC.) =   4.22
  LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20229.00 =  3658.71 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020229.0 TO NODE LR020230.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1826.00  DOWNSTREAM ELEVATION(FEET) = 1800.00
  STREET LENGTH(FEET) =   713.66   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.76

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      86.67
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.62
    HALFSTREET FLOOD WIDTH(FEET) =   24.18
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.98
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.35
  STREET FLOW TRAVEL TIME(MIN.) =   1.70   Tc(MIN.) =  23.50
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.404
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A       11.14      0.98      0.25    32
  PUBLIC PARK                A        6.85      0.98      0.85    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        3.99      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =   21.98      SUBAREA RUNOFF(CFS) =   18.12
  EFFECTIVE AREA(ACRES) =    110.29    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =    110.29        PEAK FLOW RATE(CFS) =      90.57

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.63   HALFSTREET FLOOD WIDTH(FEET) =  24.61
  FLOW VELOCITY(FEET/SEC.) =  7.05   DEPTH*VELOCITY(FT*FT/SEC.) =   4.46
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  713.7 FT WITH ELEVATION-DROP =  26.0 FT, IS   39.7 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20230.00
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 LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20230.00 =  4372.37 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020230.0 TO NODE LR020231.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1800.00  DOWNSTREAM ELEVATION(FEET) = 1769.00
 STREET LENGTH(FEET) =   900.35   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.77

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     103.88
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.66
   HALFSTREET FLOOD WIDTH(FEET) =   26.19
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.19
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.77
 STREET FLOW TRAVEL TIME(MIN.) =   2.09   Tc(MIN.) =  25.59
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.334
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 MOBILE HOME PARK           A       14.01      0.98      0.25    32
 MOBILE HOME PARK           B        8.21      0.75      0.25    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        2.69      0.98      0.60    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        3.23      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.88
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.32
 SUBAREA AREA(ACRES) =   28.14      SUBAREA RUNOFF(CFS) =   26.61
 EFFECTIVE AREA(ACRES) =    138.43    AREA-AVERAGED Fm(INCH/HR) =  0.45
 AREA-AVERAGED Fp(INCH/HR) =  0.96  AREA-AVERAGED Ap =  0.47
 TOTAL AREA(ACRES) =    138.43        PEAK FLOW RATE(CFS) =     110.25

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.68   HALFSTREET FLOOD WIDTH(FEET) =  26.80
 FLOW VELOCITY(FEET/SEC.) =  7.30   DEPTH*VELOCITY(FT*FT/SEC.) =   4.94
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  900.3 FT WITH ELEVATION-DROP =  31.0 FT, IS   52.1 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20231.00
 LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20231.00 =  5272.72 FEET.
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****************************************************************************
 FLOW PROCESS FROM NODE LR020231.0 TO NODE LR020232.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1769.00  DOWNSTREAM ELEVATION(FEET) = 1739.00
 STREET LENGTH(FEET) =   905.39   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.78

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     117.26
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.69
   HALFSTREET FLOOD WIDTH(FEET) =   27.66
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.31
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.07
 STREET FLOW TRAVEL TIME(MIN.) =   2.06   Tc(MIN.) =  27.65
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.273
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 MOBILE HOME PARK           A        0.17      0.98      0.25    32
 MOBILE HOME PARK           B        5.75      0.75      0.25    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       11.10      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.48
 SUBAREA AREA(ACRES) =   17.02      SUBAREA RUNOFF(CFS) =   14.02
 EFFECTIVE AREA(ACRES) =    155.45    AREA-AVERAGED Fm(INCH/HR) =  0.44
 AREA-AVERAGED Fp(INCH/HR) =  0.94  AREA-AVERAGED Ap =  0.47
 TOTAL AREA(ACRES) =    155.45        PEAK FLOW RATE(CFS) =     116.71

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.69   HALFSTREET FLOOD WIDTH(FEET) =  27.60
 FLOW VELOCITY(FEET/SEC.) =  7.31   DEPTH*VELOCITY(FT*FT/SEC.) =   5.06
 LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20232.00 =  6178.11 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020232.0 TO NODE LR020232.0 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
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  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  27.65
  RAINFALL INTENSITY(INCH/HR) =   1.27
  AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.94
  AREA-AVERAGED Ap =  0.47
  EFFECTIVE STREAM AREA(ACRES) =   155.45
  TOTAL STREAM AREA(ACRES) =   155.45
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    116.71

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    127.81  30.19    1.208  0.96( 0.44) 0.46   170.7 LR020210.0
      1    118.96  34.42    1.117  0.96( 0.45) 0.46   181.7 LR020200.0
      2    116.71  27.65    1.273  0.94( 0.44) 0.47   155.4 LR020220.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    243.80  27.65    1.273  0.95( 0.44) 0.46   311.8 LR020220.0
      2    235.37  30.19    1.208  0.95( 0.44) 0.46   326.1 LR020210.0
      3    213.73  34.42    1.117  0.95( 0.44) 0.47   337.2 LR020200.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    243.80    Tc(MIN.) =    27.65
  EFFECTIVE AREA(ACRES) =   311.78   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.95  AREA-AVERAGED Ap =  0.46
  TOTAL AREA(ACRES) =    337.15
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20232.00 =  7433.97 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020232.0 TO NODE LR020249.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1739.00  DOWNSTREAM ELEVATION(FEET) = 1735.00
  STREET LENGTH(FEET) =  1274.82   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     249.42
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.30
```



```
    HALFSTREET FLOOD WIDTH(FEET) =   63.51
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.43
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.45
  STREET FLOW TRAVEL TIME(MIN.) =   6.19   Tc(MIN.) =  33.84
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.128
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.11      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       18.30      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   18.41      SUBAREA RUNOFF(CFS) =   11.24
  EFFECTIVE AREA(ACRES) =    330.19    AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.94  AREA-AVERAGED Ap =  0.47
  TOTAL AREA(ACRES) =    355.56        PEAK FLOW RATE(CFS) =     243.80
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.29   HALFSTREET FLOOD WIDTH(FEET) =  63.02
  FLOW VELOCITY(FEET/SEC.) =  3.41   DEPTH*VELOCITY(FT*FT/SEC.) =   4.40

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.87
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  69.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.51
  PIPE-FLOW(CFS) =    195.29
  PIPEFLOW TRAVEL TIME(MIN.) =   2.83    Tc(MIN.) =  30.48
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.201
  SUBAREA AREA(ACRES) =   18.41      SUBAREA RUNOFF(CFS) =   12.45
  TOTAL AREA(ACRES) =    355.56        PEAK FLOW RATE(CFS) =    243.80
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   48.50
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.81
    HALFSTREET FLOOD WIDTH(FEET) =   39.16
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.14
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.74
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20249.00 =  8708.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020249.0 TO NODE LR020249.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
```

```
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  30.48
  RAINFALL INTENSITY(INCH/HR) =   1.20
  AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.94
  AREA-AVERAGED Ap =  0.47
  EFFECTIVE STREAM AREA(ACRES) =   330.19
  TOTAL STREAM AREA(ACRES) =   355.56
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    243.80

****************************************************************************
  FLOW PROCESS FROM NODE LR020240.0 TO NODE LR020241.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   916.98
  ELEVATION DATA: UPSTREAM(FEET) =   1880.00  DOWNSTREAM(FEET) =   1855.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.964
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.006
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        4.79      0.98      0.60    32   12.96
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.77      0.75      0.60    56   12.96
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.88
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     11.41
  TOTAL AREA(ACRES) =      8.56   PEAK FLOW RATE(CFS) =     11.41

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020241.0 TO NODE LR020242.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1855.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1848.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   207.39
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.953
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.59      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.06      0.75      0.60    56
```



```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.85
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     13.78
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.86
  AVERAGE FLOW DEPTH(FEET) =   0.50   FLOOD WIDTH(FEET) =   20.10
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.59   Tc(MIN.) =  13.55
  SUBAREA AREA(ACRES) =    3.65       SUBAREA RUNOFF(CFS) =    4.75
  EFFECTIVE AREA(ACRES) =   12.21     AREA-AVERAGED Fm(INCH/HR) =   0.52
  AREA-AVERAGED Fp(INCH/HR) =   0.87  AREA-AVERAGED Ap =   0.60
  TOTAL AREA(ACRES) =     12.21         PEAK FLOW RATE(CFS) =      15.75

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.51   FLOOD WIDTH(FEET) =   21.89
  FLOW VELOCITY(FEET/SEC.) =   5.89   DEPTH*VELOCITY(FT*FT/SEC) =   3.01
  LONGEST FLOWPATH FROM NODE  20240.00 TO NODE  20242.00 =  1124.37 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020242.0 TO NODE LR020243.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1848.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1840.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   276.91
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.884
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        2.48      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.59      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.59      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.83
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     19.84
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.52
  AVERAGE FLOW DEPTH(FEET) =   0.55   FLOOD WIDTH(FEET) =   26.37
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.84   Tc(MIN.) =  14.39
  SUBAREA AREA(ACRES) =    6.66       SUBAREA RUNOFF(CFS) =    8.18
  EFFECTIVE AREA(ACRES) =   18.87     AREA-AVERAGED Fm(INCH/HR) =   0.52
  AREA-AVERAGED Fp(INCH/HR) =   0.85  AREA-AVERAGED Ap =   0.61
  TOTAL AREA(ACRES) =     18.87         PEAK FLOW RATE(CFS) =      23.17

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.57   FLOOD WIDTH(FEET) =   28.76
  FLOW VELOCITY(FEET/SEC.) =   5.58   DEPTH*VELOCITY(FT*FT/SEC) =   3.17
```

```
 LONGEST FLOWPATH FROM NODE  20240.00 TO NODE  20243.00 =  1401.28 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020243.0 TO NODE LR020244.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1840.00  DOWNSTREAM ELEVATION(FEET) = 1830.00
 STREET LENGTH(FEET) =   293.50   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.81

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      28.11
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.49
   HALFSTREET FLOOD WIDTH(FEET) =   16.71
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.71
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.32
 STREET FLOW TRAVEL TIME(MIN.) =   1.04   Tc(MIN.) =  15.43
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.807
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        3.29      0.98      0.60    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        4.18      0.75      0.60    56
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        1.12      0.75      0.90    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.83
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.64
 SUBAREA AREA(ACRES) =    8.59      SUBAREA RUNOFF(CFS) =    9.87
 EFFECTIVE AREA(ACRES) =     27.46    AREA-AVERAGED Fm(INCH/HR) =  0.52
 AREA-AVERAGED Fp(INCH/HR) =  0.85  AREA-AVERAGED Ap =  0.62
 TOTAL AREA(ACRES) =     27.46        PEAK FLOW RATE(CFS) =      31.74

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.51   HALFSTREET FLOOD WIDTH(FEET) =  17.53
 FLOW VELOCITY(FEET/SEC.) =  4.86   DEPTH*VELOCITY(FT*FT/SEC.) =   2.47
 LONGEST FLOWPATH FROM NODE  20240.00 TO NODE  20244.00 =  1694.78 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020244.0 TO NODE LR020245.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
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 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1830.00  DOWNSTREAM ELEVATION(FEET) = 1815.00
 STREET LENGTH(FEET) =   273.00   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.73

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      36.02
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.49
   HALFSTREET FLOOD WIDTH(FEET) =   16.77
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.00
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.96
 STREET FLOW TRAVEL TIME(MIN.) =   0.76   Tc(MIN.) =  16.19
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.756
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        2.55      0.98      0.60    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        4.04      0.75      0.60    56
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        1.15      0.75      0.90    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.82
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.64
 SUBAREA AREA(ACRES) =    7.74      SUBAREA RUNOFF(CFS) =    8.56
 EFFECTIVE AREA(ACRES) =     35.20    AREA-AVERAGED Fm(INCH/HR) =  0.52
 AREA-AVERAGED Fp(INCH/HR) =  0.84  AREA-AVERAGED Ap =  0.62
 TOTAL AREA(ACRES) =     35.20        PEAK FLOW RATE(CFS) =      39.03

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.50   HALFSTREET FLOOD WIDTH(FEET) =  17.30
 FLOW VELOCITY(FEET/SEC.) =  6.13   DEPTH*VELOCITY(FT*FT/SEC.) =   3.09
 LONGEST FLOWPATH FROM NODE  20240.00 TO NODE  20245.00 =  1967.78 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020245.0 TO NODE LR020246.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1815.00  DOWNSTREAM ELEVATION(FEET) = 1805.00
 STREET LENGTH(FEET) =   359.00   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00
```

```
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.85

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      44.34
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.58
    HALFSTREET FLOOD WIDTH(FEET) =   20.87
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.88
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.81
  STREET FLOW TRAVEL TIME(MIN.) =   1.23   Tc(MIN.) =  17.41
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.681
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        3.90      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.36      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.93      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.83
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
  SUBAREA AREA(ACRES) =   10.19      SUBAREA RUNOFF(CFS) =   10.63
  EFFECTIVE AREA(ACRES) =     45.39    AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.84  AREA-AVERAGED Ap =  0.63
  TOTAL AREA(ACRES) =     45.39        PEAK FLOW RATE(CFS) =      47.27

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.59   HALFSTREET FLOOD WIDTH(FEET) =  21.40
  FLOW VELOCITY(FEET/SEC.) =  4.96   DEPTH*VELOCITY(FT*FT/SEC.) =   2.91
  LONGEST FLOWPATH FROM NODE  20240.00 TO NODE  20246.00 =  2326.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020246.0 TO NODE LR020247.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1805.00  DOWNSTREAM ELEVATION(FEET) = 1795.00
  STREET LENGTH(FEET) =   324.04   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
```



```
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.83

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      51.50
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.59
    HALFSTREET FLOOD WIDTH(FEET) =   21.69
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.26
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.11
  STREET FLOW TRAVEL TIME(MIN.) =   1.03   Tc(MIN.) =  18.44
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.624
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        3.02      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.88      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.55      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.83
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.62
  SUBAREA AREA(ACRES) =    8.45      SUBAREA RUNOFF(CFS) =    8.45
  EFFECTIVE AREA(ACRES) =     53.84    AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.84  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =     53.84        PEAK FLOW RATE(CFS) =      53.41

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.60   HALFSTREET FLOOD WIDTH(FEET) =  21.99
  FLOW VELOCITY(FEET/SEC.) =  5.32   DEPTH*VELOCITY(FT*FT/SEC.) =   3.18
  LONGEST FLOWPATH FROM NODE  20240.00 TO NODE  20247.00 =  2650.82 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020247.0 TO NODE LR020248.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1795.00  DOWNSTREAM ELEVATION(FEET) = 1782.00
  STREET LENGTH(FEET) =   263.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.74

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      57.05
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
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```
  STREET FLOW DEPTH(FEET) =  0.57
  HALFSTREET FLOOD WIDTH(FEET) =   20.58
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.45
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.67
 STREET FLOW TRAVEL TIME(MIN.) =   0.68   Tc(MIN.) =  19.12
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.589
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        1.94      0.98      0.60    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        5.00      0.75      0.60    56
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        0.49      0.75      0.90    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.81
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.62
 SUBAREA AREA(ACRES) =    7.43      SUBAREA RUNOFF(CFS) =    7.29
 EFFECTIVE AREA(ACRES) =     61.27    AREA-AVERAGED Fm(INCH/HR) =  0.52
 AREA-AVERAGED Fp(INCH/HR) =  0.83  AREA-AVERAGED Ap =  0.62
 TOTAL AREA(ACRES) =     61.27        PEAK FLOW RATE(CFS) =      59.00

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.57   HALFSTREET FLOOD WIDTH(FEET) =  20.81
 FLOW VELOCITY(FEET/SEC.) =  6.52   DEPTH*VELOCITY(FT*FT/SEC.) =   3.75
 LONGEST FLOWPATH FROM NODE  20240.00 TO NODE  20248.00 =  2913.82 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020248.0 TO NODE LR020249.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1782.00  DOWNSTREAM ELEVATION(FEET) = 1735.00
 STREET LENGTH(FEET) =  1589.51   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      68.32
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.65
  HALFSTREET FLOOD WIDTH(FEET) =   24.39
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.57
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.60
 STREET FLOW TRAVEL TIME(MIN.) =   4.76   Tc(MIN.) =  23.88
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.390
```



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 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        0.28      0.98      0.60    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       21.09      0.75      0.60    56
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        0.85      0.75      0.90    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.61
 SUBAREA AREA(ACRES) =   22.22      SUBAREA RUNOFF(CFS) =   18.63
 EFFECTIVE AREA(ACRES) =     83.49    AREA-AVERAGED Fm(INCH/HR) =  0.50
 AREA-AVERAGED Fp(INCH/HR) =  0.81  AREA-AVERAGED Ap =  0.62
 TOTAL AREA(ACRES) =     83.49        PEAK FLOW RATE(CFS) =      66.69

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.64   HALFSTREET FLOOD WIDTH(FEET) =  24.15
 FLOW VELOCITY(FEET/SEC.) =  5.54   DEPTH*VELOCITY(FT*FT/SEC.) =   3.55
 LONGEST FLOWPATH FROM NODE  20240.00 TO NODE  20249.00 =  4503.33 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020249.0 TO NODE LR020249.0 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  23.88
 RAINFALL INTENSITY(INCH/HR) =   1.39
 AREA-AVERAGED Fm(INCH/HR) =  0.50
 AREA-AVERAGED Fp(INCH/HR) =  0.81
 AREA-AVERAGED Ap =  0.62
 EFFECTIVE STREAM AREA(ACRES) =    83.49
 TOTAL STREAM AREA(ACRES) =    83.49
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     66.69

 ** CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    243.80  30.48    1.201  0.94( 0.44) 0.47   330.2 LR020220.0
     1    235.37  33.10    1.143  0.94( 0.44) 0.47   344.6 LR020210.0
     1    213.73  37.42    1.062  0.94( 0.44) 0.47   355.6 LR020200.0
     2     66.69  23.88    1.390  0.81( 0.50) 0.62    83.5 LR020240.0

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    305.37  23.88    1.390  0.90( 0.46) 0.51   342.2 LR020240.0
     2    296.26  30.48    1.201  0.90( 0.45) 0.50   413.7 LR020220.0
     3    283.47  33.10    1.143  0.91( 0.45) 0.50   428.0 LR020210.0
```

```
     4    255.73  37.42    1.062  0.91( 0.45) 0.50   439.1 LR020200.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    305.37    Tc(MIN.) =    23.88
  EFFECTIVE AREA(ACRES) =   342.20   AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.90  AREA-AVERAGED Ap =  0.51
  TOTAL AREA(ACRES) =    439.05
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20249.00 =  8708.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020249.0 TO NODE LR020250.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1735.00  DOWNSTREAM ELEVATION(FEET) = 1733.00
  STREET LENGTH(FEET) =   391.69   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     305.73
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.28
    HALFSTREET FLOOD WIDTH(FEET) =   62.66
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.34
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.55
  STREET FLOW TRAVEL TIME(MIN.) =   1.50   Tc(MIN.) =  25.38
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.340
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.58      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.42      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.73
  SUBAREA AREA(ACRES) =    1.00      SUBAREA RUNOFF(CFS) =    0.72
  EFFECTIVE AREA(ACRES) =    343.20    AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.90  AREA-AVERAGED Ap =  0.51
  TOTAL AREA(ACRES) =    440.05        PEAK FLOW RATE(CFS) =     305.37
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.28   HALFSTREET FLOOD WIDTH(FEET) =  62.60
```



```
  FLOW VELOCITY(FEET/SEC.) =  4.34   DEPTH*VELOCITY(FT*FT/SEC.) =   5.55

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 1.07
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  63.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.02
  PIPE-FLOW(CFS) =    195.46
  PIPEFLOW TRAVEL TIME(MIN.) =   0.72    Tc(MIN.) =  24.60
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.366
  SUBAREA AREA(ACRES) =    1.00      SUBAREA RUNOFF(CFS) =    0.74
  TOTAL AREA(ACRES) =    440.05        PEAK FLOW RATE(CFS) =    305.37
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  109.91
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.94
    HALFSTREET FLOOD WIDTH(FEET) =   45.63
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.27
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.07
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20250.00 =  9100.48 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020250.0 TO NODE LR020250.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020151.0 TO NODE LR020151.0 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME:  20151.dna
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      864.28    Tc(MIN.) =  42.10
  AREA-AVERAGED Fm(INCH/HR) =  0.61    Ybar = 0.66
  TOTAL AREA(ACRES) =    1725.04
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20151.00 = 15438.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020151.0 TO NODE LR020151.0 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      864.28    Tc(MIN.) =  42.10
  AREA-AVERAGED Fm(INCH/HR) =  0.61    Ybar = 0.66
  TOTAL AREA(ACRES) =    1725.04
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20151.00 = 15438.18 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR020151.0 TO NODE LR020151.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020151.0 TO NODE LR020250.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1785.00  DOWNSTREAM(FEET) =   1733.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1656.68   CHANNEL SLOPE =  0.0314
  CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   6.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    864.28
  FLOW VELOCITY(FEET/SEC.) =  11.29   FLOW DEPTH(FEET) =   2.16
  TRAVEL TIME(MIN.) =   2.45   Tc(MIN.) =  44.54
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20250.00 = 17094.86 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020250.0 TO NODE LR020250.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  44.54
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.957
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.58      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       54.48      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.89
  SUBAREA AREA(ACRES) =   56.06
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.31;30M= 0.64;1H= 0.85;3H= 1.57;6H= 2.38;24H= 4.87
  S-GRAPH: VALLEY(DEV.)= 23.5%;VALLEY(UNDEV.)/DESERT= 76.5%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.74; LAG(HR) = 0.59; Fm(INCH/HR) = 0.61; Ybar = 0.66
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.92; 30M = 0.92; 1HR = 0.92;
  3HR = 0.99; 6HR = 0.99; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1781.10
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20250.00 = 17094.86 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0508; Lca/L=0.4,n=.0456; Lca/L=0.5,n=.0419;Lca/L=0.6,n=.0391
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     263.99
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    851.82
  TOTAL AREA(ACRES) =   1781.10       PEAK FLOW RATE(CFS) =     864.28
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR020250.0 TO NODE LR020250.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =      864.28    Tc(MIN.) =  44.54
  AREA-AVERAGED Fm(INCH/HR) =  0.61    Ybar = 0.66
  TOTAL AREA(ACRES) =    1781.10
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20250.00 = 17094.86 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    305.37  24.60    1.366  0.90( 0.46) 0.51   343.2 LR020240.0
      2    296.26  31.20    1.184  0.90( 0.45) 0.50   414.7 LR020220.0
      3    283.47  33.83    1.128  0.91( 0.45) 0.50   429.0 LR020210.0
      4    255.73  38.15    1.050  0.91( 0.45) 0.50   440.1 LR020200.0
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20250.00 =  9100.48 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.31;30M= 0.63;1H= 0.84;3H= 1.54;6H= 2.32;24H= 4.78
  S-GRAPH: VALLEY(DEV.)= 38.4%;VALLEY(UNDEV.)/DESERT= 61.6%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.74; LAG(HR) = 0.59; Fm(INCH/HR) = 0.58; Ybar = 0.63
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.90; 30M = 0.90; 1HR = 0.90;
  3HR = 0.99; 6HR = 0.99; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   2221.15
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20250.00 = 17094.86 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0508; Lca/L=0.4,n=.0456; Lca/L=0.5,n=.0419;Lca/L=0.6,n=.0391
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     346.79
  PEAK FLOW RATE(CFS) =    1075.85

****************************************************************************
  FLOW PROCESS FROM NODE LR020250.0 TO NODE LR020250.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020250.0 TO NODE LR020274.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1733.00  DOWNSTREAM(FEET) =   1670.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2379.03   CHANNEL SLOPE =  0.0265
  CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   7.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   1075.85
  FLOW VELOCITY(FEET/SEC.) =  11.47   FLOW DEPTH(FEET) =   2.57
  TRAVEL TIME(MIN.) =   3.46   Tc(MIN.) =  48.00
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20274.00 = 19473.89 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR020274.0 TO NODE LR020274.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  48.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.915
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.23      0.75      0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.07      0.98      0.60    32
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        9.49      0.75      0.90    56
  SCHOOL                     B       24.91      0.75      0.60    56
  SCHOOL                     A        0.90      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA AREA(ACRES) =   38.60
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.31;30M= 0.63;1H= 0.84;3H= 1.54;6H= 2.31;24H= 4.77
  S-GRAPH: VALLEY(DEV.)= 39.0%;VALLEY(UNDEV.)/DESERT= 61.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.80; LAG(HR) = 0.64; Fm(INCH/HR) = 0.58; Ybar = 0.63
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.90; 30M = 0.90; 1HR = 0.90;
  3HR = 0.98; 6HR = 0.99; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   2259.75
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20274.00 = 19473.89 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0488; Lca/L=0.4,n=.0437; Lca/L=0.5,n=.0402;Lca/L=0.6,n=.0375
  TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =     353.07
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1050.53
  TOTAL AREA(ACRES) =   2259.75       PEAK FLOW RATE(CFS) =    1075.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020274.0 TO NODE LR020274.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =    1075.85    Tc(MIN.) =  48.00
  AREA-AVERAGED Fm(INCH/HR) =  0.58   Ybar = 0.63
  TOTAL AREA(ACRES) =    2259.75

****************************************************************************
  FLOW PROCESS FROM NODE LR020260.0 TO NODE LR020261.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
```



```
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   680.83
  ELEVATION DATA: UPSTREAM(FEET) =   2600.00  DOWNSTREAM(FEET) =   2360.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.333
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.824
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.43      0.61      1.00    66   11.82
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.14      0.75      0.70    56    7.33
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.65
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.90
  SUBAREA RUNOFF(CFS) =     13.24
  TOTAL AREA(ACRES) =      6.57   PEAK FLOW RATE(CFS) =     13.24

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020261.0 TO NODE LR020262.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2360.00  DOWNSTREAM(FEET) =   2280.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   583.76   CHANNEL SLOPE =  0.1370
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     13.24
  FLOW VELOCITY(FEET/SEC.) =   3.26   FLOW DEPTH(FEET) =   0.29
  TRAVEL TIME(MIN.) =   2.99   Tc(MIN.) =  10.32
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20262.00 =  1264.59 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020262.0 TO NODE LR020262.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  10.32
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.300
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.44      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       15.90      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.64
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.93
  SUBAREA AREA(ACRES) =   20.34      SUBAREA RUNOFF(CFS) =   31.23
  EFFECTIVE AREA(ACRES) =     26.91   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.64  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =     26.91       PEAK FLOW RATE(CFS) =      41.37

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
```

```
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020262.0 TO NODE LR020263.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2280.00  DOWNSTREAM(FEET) =   2170.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   994.37   CHANNEL SLOPE =  0.1106
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     41.37
  FLOW VELOCITY(FEET/SEC.) =   4.03   FLOW DEPTH(FEET) =   0.45
  TRAVEL TIME(MIN.) =   4.11   Tc(MIN.) =  14.43
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20263.00 =  2258.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020263.0 TO NODE LR020263.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  14.43
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.881
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        8.82      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =    8.82      SUBAREA RUNOFF(CFS) =   10.78
  EFFECTIVE AREA(ACRES) =     35.73   AREA-AVERAGED Fm(INCH/HR) =  0.58
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =     35.73       PEAK FLOW RATE(CFS) =      42.00

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020263.0 TO NODE LR020264.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2170.00  DOWNSTREAM(FEET) =   2110.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   784.49   CHANNEL SLOPE =  0.0765
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     42.00
  FLOW VELOCITY(FEET/SEC.) =   3.56   FLOW DEPTH(FEET) =   0.49
  TRAVEL TIME(MIN.) =   3.67   Tc(MIN.) =  18.10
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20264.00 =  3043.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020264.0 TO NODE LR020264.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
```



```
============================================================================
  MAINLINE Tc(MIN) =  18.10
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.642
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B       17.48      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        7.48      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.70
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.79
  SUBAREA AREA(ACRES) =   24.96      SUBAREA RUNOFF(CFS) =   24.52
  EFFECTIVE AREA(ACRES) =     60.69   AREA-AVERAGED Fm(INCH/HR) =  0.57
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     60.69       PEAK FLOW RATE(CFS) =      58.83

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020264.0 TO NODE LR020265.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2110.00  DOWNSTREAM(FEET) =   2080.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   660.96   CHANNEL SLOPE =  0.0454
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     58.83
  FLOW VELOCITY(FEET/SEC.) =   3.19   FLOW DEPTH(FEET) =   0.61
  TRAVEL TIME(MIN.) =   3.46   Tc(MIN.) =  21.55
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20265.00 =  3704.41 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020265.0 TO NODE LR020265.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.55
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.479
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        6.85      0.75      0.70    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"          B        0.71      0.75      0.90    56
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       59.45      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.63
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.97
  SUBAREA AREA(ACRES) =   67.01      SUBAREA RUNOFF(CFS) =   52.67
  EFFECTIVE AREA(ACRES) =    127.70   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.65  AREA-AVERAGED Ap =  0.91
  TOTAL AREA(ACRES) =    127.70       PEAK FLOW RATE(CFS) =     102.58
```

```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020265.0 TO NODE LR020266.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2080.00  DOWNSTREAM(FEET) =   2010.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   947.22   CHANNEL SLOPE =  0.0739
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    102.58
  FLOW VELOCITY(FEET/SEC.) =   4.39   FLOW DEPTH(FEET) =   0.68
  TRAVEL TIME(MIN.) =   3.60   Tc(MIN.) =  25.15
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20266.00 =  4651.63 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020266.0 TO NODE LR020266.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  25.15
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.348
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       10.89      0.75      0.70    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       11.99      0.75      0.90    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.30      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.72
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.84
  SUBAREA AREA(ACRES) =   27.18      SUBAREA RUNOFF(CFS) =   18.20
  EFFECTIVE AREA(ACRES) =    154.88   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.89
  TOTAL AREA(ACRES) =    154.88       PEAK FLOW RATE(CFS) =     105.74

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020266.0 TO NODE LR020267.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2010.00  DOWNSTREAM(FEET) =   1960.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   906.98   CHANNEL SLOPE =  0.0551
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    105.74
  FLOW VELOCITY(FEET/SEC.) =   3.97   FLOW DEPTH(FEET) =   0.73
  TRAVEL TIME(MIN.) =   3.80   Tc(MIN.) =  28.95
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20267.00 =  5558.61 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR020267.0 TO NODE LR020267.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  28.95
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.239
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       53.81      0.75      0.70    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       46.51      0.75      0.90    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       68.77      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.88
  SUBAREA AREA(ACRES) =  169.09      SUBAREA RUNOFF(CFS) =   96.96
  EFFECTIVE AREA(ACRES) =    323.97   AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.89
  TOTAL AREA(ACRES) =    323.97       PEAK FLOW RATE(CFS) =     187.47

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020267.0 TO NODE LR020268.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1960.00  DOWNSTREAM(FEET) =   1890.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1268.30   CHANNEL SLOPE =  0.0552
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    187.47
  FLOW VELOCITY(FEET/SEC.) =   8.89   FLOW DEPTH(FEET) =   1.60
  TRAVEL TIME(MIN.) =   2.38   Tc(MIN.) =  31.33
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20268.00 =  6826.91 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020268.0 TO NODE LR020268.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  31.33
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.181
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       30.11      0.75      0.90    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        0.46      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.90
```

```
  SUBAREA AREA(ACRES) =   30.57      SUBAREA RUNOFF(CFS) =   14.04
  EFFECTIVE AREA(ACRES) =    354.54   AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.89
  TOTAL AREA(ACRES) =    354.54       PEAK FLOW RATE(CFS) =     187.47
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020268.0 TO NODE LR020269.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1890.00  DOWNSTREAM(FEET) =   1870.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   379.58   CHANNEL SLOPE =  0.0527
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    187.47
  FLOW VELOCITY(FEET/SEC.) =   8.78   FLOW DEPTH(FEET) =   1.61
  TRAVEL TIME(MIN.) =   0.72   Tc(MIN.) =  32.05
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20269.00 =  7206.49 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020269.0 TO NODE LR020269.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  32.05
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.165
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       17.99      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.04      0.75      0.60    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       18.04      0.61      1.00    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       16.31      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.70
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.87
  SUBAREA AREA(ACRES) =   52.38      SUBAREA RUNOFF(CFS) =   26.37
  EFFECTIVE AREA(ACRES) =    406.92   AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.88
  TOTAL AREA(ACRES) =    406.92       PEAK FLOW RATE(CFS) =     206.08

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020269.0 TO NODE LR020270.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
```



```
  ELEVATION DATA: UPSTREAM(FEET) =   1870.00  DOWNSTREAM(FEET) =   1770.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2346.89   CHANNEL SLOPE =  0.0426
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    206.08
  FLOW VELOCITY(FEET/SEC.) =   8.39   FLOW DEPTH(FEET) =   1.81
  TRAVEL TIME(MIN.) =   4.66   Tc(MIN.) =  36.72
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20270.00 =  9553.38 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020270.0 TO NODE LR020270.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  36.72
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.074
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.45      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       71.00      0.75      0.90    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        5.28      0.61      1.00    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       40.34      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.82
  SUBAREA AREA(ACRES) =  122.07      SUBAREA RUNOFF(CFS) =   50.86
  EFFECTIVE AREA(ACRES) =    528.99   AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.69  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =    528.99       PEAK FLOW RATE(CFS) =     223.54

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020270.0 TO NODE LR020271.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1770.00  DOWNSTREAM ELEVATION(FEET) = 1755.00
  STREET LENGTH(FEET) =   692.85   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     252.18
```

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  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.97
  HALFSTREET FLOOD WIDTH(FEET) =   47.09
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.94
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.73
STREET FLOW TRAVEL TIME(MIN.) =   1.66   Tc(MIN.) =  38.38
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.046
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
".4 DWELLING/ACRE"         B      127.18      0.75      0.90    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B       11.00      0.75      0.60    56
RESIDENTIAL
"2 DWELLINGS/ACRE"         B       18.36      0.75      0.70    56
NATURAL FAIR COVER
"OPEN BRUSH"               B        0.17      0.61      1.00    66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.86
SUBAREA AREA(ACRES) =  156.71      SUBAREA RUNOFF(CFS) =   57.28
EFFECTIVE AREA(ACRES) =    685.70    AREA-AVERAGED Fm(INCH/HR) =  0.61
AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.87
TOTAL AREA(ACRES) =    685.70        PEAK FLOW RATE(CFS) =     267.40

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.98   HALFSTREET FLOOD WIDTH(FEET) =  47.89
FLOW VELOCITY(FEET/SEC.) =  7.07   DEPTH*VELOCITY(FT*FT/SEC.) =   6.96

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.87
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  13.49
PIPE-FLOW(CFS) =    112.01
PIPEFLOW TRAVEL TIME(MIN.) =   0.86    Tc(MIN.) =  37.57
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.059
SUBAREA AREA(ACRES) =  156.71      SUBAREA RUNOFF(CFS) =   59.17
TOTAL AREA(ACRES) =    685.70        PEAK FLOW RATE(CFS) =    275.69

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  163.67
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.86
  HALFSTREET FLOOD WIDTH(FEET) =   41.78
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.09
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.25
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
       AND L =   692.8 FT WITH ELEVATION-DROP =  15.0 FT, IS  204.1 CFS,
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        WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  20271.00
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20271.00 = 10246.23 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020270.0 TO NODE LR020271.0 IS CODE =  71
----------------------------------------------------------------------------
  >>>>>PEAK FLOW RATE ESTIMATOR CHANGED TO UNIT-HYDROGRAPH METHOD<<<<<
  >>>>>USING TIME-OF-CONCENTRATION OF LONGEST FLOWPATH<<<<<
============================================================================
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.43;6H= 2.06;24H= 4.43
  S-GRAPH: VALLEY(DEV.)= 28.6%;VALLEY(UNDEV.)/DESERT= 71.4%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.63; LAG(HR) = 0.50; Fm(INCH/HR) = 0.61; Ybar = 0.69
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 1.00; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    685.70
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20271.00 = 10246.23 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0632; Lca/L=0.4,n=.0567; Lca/L=0.5,n=.0521;Lca/L=0.6,n=.0486
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =      87.65
  UNIT-HYDROGRAPH METHOD PEAK FLOW RATE(CFS) =    365.90
  TOTAL PEAK FLOW RATE(CFS) =    365.90 (SOURCE FLOW INCLUDED)
  RATIONAL METHOD PEAK FLOW RATE(CFS) =    275.69
   (UPSTREAM NODE PEAK FLOW RATE(CFS) =    275.69)
  PEAK FLOW RATE(CFS) USED =    365.90

****************************************************************************
  FLOW PROCESS FROM NODE LR020271.0 TO NODE LR020272.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1755.00  DOWNSTREAM ELEVATION(FEET) = 1730.00
  STREET LENGTH(FEET) =  1359.40   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.98

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     381.34
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.12
    HALFSTREET FLOOD WIDTH(FEET) =   54.66
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.37
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    8.26
  STREET FLOW TRAVEL TIME(MIN.) =   3.07   Tc(MIN.) =  40.64
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.011
  SUBAREA LOSS RATE DATA(AMC  II):
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 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
".4 DWELLING/ACRE"          B       92.29      0.75      0.90    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"        B        5.58      0.75      0.60    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.88
UNIT-HYDROGRAPH DATA:
RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.43;6H= 2.06;24H= 4.43
S-GRAPH: VALLEY(DEV.)= 25.8%;VALLEY(UNDEV.)/DESERT= 74.2%
         MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
Tc(HR) = 0.68; LAG(HR) = 0.54; Fm(INCH/HR) = 0.62; Ybar = 0.70
USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
3HR = 0.99; 6HR = 1.00; 24HR= 1.00
UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    783.57
LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20272.00 = 10246.23 FEET.
 EQUIVALENT BASIN FACTOR APPROXIMATIONS:
 Lca/L=0.3,n=.0688; Lca/L=0.4,n=.0616; Lca/L=0.5,n=.0566;Lca/L=0.6,n=.0528
TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =      98.41
UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    384.80
TOTAL AREA(ACRES) =    783.57        PEAK FLOW RATE(CFS) =     384.80

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.12   HALFSTREET FLOOD WIDTH(FEET) =  54.85
FLOW VELOCITY(FEET/SEC.) =  7.38   DEPTH*VELOCITY(FT*FT/SEC.) =   8.30

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.98
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  14.28
PIPE-FLOW(CFS) =    179.61
PIPEFLOW TRAVEL TIME(MIN.) =   1.59    Tc(MIN.) =  39.16
UNIT-HYDROGRAPH DATA:
RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.43;6H= 2.06;24H= 4.43
S-GRAPH: VALLEY(DEV.)= 25.8%;VALLEY(UNDEV.)/DESERT= 74.2%
         MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
Tc(HR) = 0.63; LAG(HR) = 0.50; Fm(INCH/HR) = 0.62; Ybar = 0.70
USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
3HR = 0.99; 6HR = 1.00; 24HR= 1.00
UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    783.57
LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20272.00 = 11605.63 FEET.
 EQUIVALENT BASIN FACTOR APPROXIMATIONS:
 Lca/L=0.3,n=.0565; Lca/L=0.4,n=.0506; Lca/L=0.5,n=.0465;Lca/L=0.6,n=.0434
TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =      98.41
TOTAL AREA(ACRES) =    783.57        PEAK FLOW RATE(CFS) =    397.40

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
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  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  217.79
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.95
    HALFSTREET FLOOD WIDTH(FEET) =   46.24
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.27
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.97

****************************************************************************
  FLOW PROCESS FROM NODE LR020272.0 TO NODE LR020273.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1730.00  DOWNSTREAM ELEVATION(FEET) = 1695.00
  STREET LENGTH(FEET) =  1247.53   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.82

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     405.85
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.07
    HALFSTREET FLOOD WIDTH(FEET) =   46.58
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.20
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    9.86
  STREET FLOW TRAVEL TIME(MIN.) =   2.26   Tc(MIN.) =  41.42
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.999
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        2.91      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"          B       52.68      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.88
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.43;6H= 2.06;24H= 4.43
  S-GRAPH: VALLEY(DEV.)= 24.4%;VALLEY(UNDEV.)/DESERT= 75.6%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.69; LAG(HR) = 0.55; Fm(INCH/HR) = 0.62; Ybar = 0.70
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    839.16
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20273.00 = 11605.63 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0627; Lca/L=0.4,n=.0562; Lca/L=0.5,n=.0517;Lca/L=0.6,n=.0482
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  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     104.49
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    404.67
  TOTAL AREA(ACRES) =    839.16        PEAK FLOW RATE(CFS) =     404.67

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.07   HALFSTREET FLOOD WIDTH(FEET) =  46.58
  FLOW VELOCITY(FEET/SEC.) =  9.17   DEPTH*VELOCITY(FT*FT/SEC.) =   9.83

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.82
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.37
  PIPE-FLOW(CFS) =    260.78
  PIPEFLOW TRAVEL TIME(MIN.) =   1.13    Tc(MIN.) =  40.29
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.43;6H= 2.06;24H= 4.43
  S-GRAPH: VALLEY(DEV.)= 24.4%;VALLEY(UNDEV.)/DESERT= 75.6%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.65; LAG(HR) = 0.52; Fm(INCH/HR) = 0.62; Ybar = 0.70
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    839.16
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20273.00 = 12853.16 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0538; Lca/L=0.4,n=.0482; Lca/L=0.5,n=.0443;Lca/L=0.6,n=.0414
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     104.49
  TOTAL AREA(ACRES) =    839.16        PEAK FLOW RATE(CFS) =    411.22

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  150.45
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.77
    HALFSTREET FLOOD WIDTH(FEET) =   31.50
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.31
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.63

****************************************************************************
  FLOW PROCESS FROM NODE LR020273.0 TO NODE LR020274.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1695.00  DOWNSTREAM ELEVATION(FEET) = 1670.00
  STREET LENGTH(FEET) =   797.55   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
```



```
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.79

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     411.76
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.06
    HALFSTREET FLOOD WIDTH(FEET) =   45.85
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.63
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   10.18
  STREET FLOW TRAVEL TIME(MIN.) =   1.38   Tc(MIN.) =  41.67
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.996
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.08      0.75      0.90    56
  SCHOOL                     B        0.94      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.81
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.43;6H= 2.06;24H= 4.43
  S-GRAPH: VALLEY(DEV.)= 24.4%;VALLEY(UNDEV.)/DESERT= 75.6%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.69; LAG(HR) = 0.56; Fm(INCH/HR) = 0.62; Ybar = 0.70
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    842.18
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20274.00 = 12853.16 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0576; Lca/L=0.4,n=.0516; Lca/L=0.5,n=.0474;Lca/L=0.6,n=.0442
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     104.89
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    404.69
  TOTAL AREA(ACRES) =    842.18        PEAK FLOW RATE(CFS) =     411.22
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.06   HALFSTREET FLOOD WIDTH(FEET) =  45.85
  FLOW VELOCITY(FEET/SEC.) =  9.61   DEPTH*VELOCITY(FT*FT/SEC.) =  10.16

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.79
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.41
  PIPE-FLOW(CFS) =    275.65
  PIPEFLOW TRAVEL TIME(MIN.) =   0.68    Tc(MIN.) =  40.98
```

```
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.43;6H= 2.06;24H= 4.43
  S-GRAPH: VALLEY(DEV.)= 24.4%;VALLEY(UNDEV.)/DESERT= 75.6%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.67; LAG(HR) = 0.54; Fm(INCH/HR) = 0.62; Ybar = 0.70
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    842.18
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20274.00 = 13650.71 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0526; Lca/L=0.4,n=.0471; Lca/L=0.5,n=.0433;Lca/L=0.6,n=.0404
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     104.89
  TOTAL AREA(ACRES) =    842.18        PEAK FLOW RATE(CFS) =    411.22
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  135.58
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.73
    HALFSTREET FLOOD WIDTH(FEET) =   29.55
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.45
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.45

****************************************************************************
  FLOW PROCESS FROM NODE LR020274.0 TO NODE LR020274.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  PEAK FLOW RATE(CFS) =     411.22    Tc(MIN.) =  40.98
  AREA-AVERAGED Fm(INCH/HR) =  0.62   Ybar = 0.70
  TOTAL AREA(ACRES) =     842.18
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1      1075.85   48.00     2259.75  LR020120.0
     2       411.22   40.98      842.18  LR020260.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.31;30M= 0.63;1H= 0.83;3H= 1.51;6H= 2.24;24H= 4.68
  S-GRAPH: VALLEY(DEV.)= 35.0%;VALLEY(UNDEV.)/DESERT= 65.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.80; LAG(HR) = 0.64; Fm(INCH/HR) = 0.59; Ybar = 0.65
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.86; 30M = 0.86; 1HR = 0.86;
  3HR = 0.98; 6HR = 0.99; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   3101.93
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20274.00 = 19473.89 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0488; Lca/L=0.4,n=.0437; Lca/L=0.5,n=.0402;Lca/L=0.6,n=.0375
  TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =     452.08
```



```
  PEAK FLOW RATE(CFS) =   1321.98

****************************************************************************
  FLOW PROCESS FROM NODE LR020274.0 TO NODE LR020274.0 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20274.dna
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =   3101.93  TC(MIN.) =     48.00
  AREA-AVERAGED Fm(INCH/HR)=  0.59   Ybar =  0.65
  PEAK FLOW RATE(CFS)   =   1321.98
============================================================================
============================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
         (c) Copyright 1983-2002 Advanced Engineering Software (aes)
             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                          San Bernardino County
                    Transportation/ Flood Control Department

                          Water Resources Division

 ************************ DESCRIPTION OF STUDY *************************
* LR0203ZZ                                                             *
* 10-Year Storm                                                        *
*                                                                      *
 ************************************************************************

  FILE NAME: LR0203ZZ.Z10
  TIME/DATE OF STUDY: 09:58 02/22/2006
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 0.8000

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
```



```
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


************************************************************************
  FLOW PROCESS FROM NODE LR020300.0 TO NODE LR020301.0 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   658.37
  ELEVATION DATA: UPSTREAM(FEET) =   2600.00  DOWNSTREAM(FEET) =   2400.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.287
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.624
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        6.22      0.61      1.00    66   12.01
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.99      0.75      0.90    56    8.29
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.63
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.99
  SUBAREA RUNOFF(CFS) =     12.99
  TOTAL AREA(ACRES) =      7.21   PEAK FLOW RATE(CFS) =     12.99

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

************************************************************************
  FLOW PROCESS FROM NODE LR020301.0 TO NODE LR020302.0 IS CODE =  54
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2400.00  DOWNSTREAM(FEET) =   2380.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   422.45   CHANNEL SLOPE =  0.0473
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
```

```
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     12.99
  FLOW VELOCITY(FEET/SEC.) =   2.24   FLOW DEPTH(FEET) =   0.34
  TRAVEL TIME(MIN.) =   3.14   Tc(MIN.) =  11.43
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20302.00 =  1080.82 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020302.0 TO NODE LR020302.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  11.43
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.164
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.12      0.75      0.90    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.14      0.61      1.00    66
  SCHOOL                     B        3.66      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.66
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.81
  SUBAREA AREA(ACRES) =    7.92      SUBAREA RUNOFF(CFS) =   11.58
  EFFECTIVE AREA(ACRES) =     15.13   AREA-AVERAGED Fm(INCH/HR) =  0.58
  AREA-AVERAGED Fp(INCH/HR) =  0.65  AREA-AVERAGED Ap =  0.90
  TOTAL AREA(ACRES) =     15.13       PEAK FLOW RATE(CFS) =      21.59

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020302.0 TO NODE LR020303.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2380.00  DOWNSTREAM(FEET) =   2320.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   870.68   CHANNEL SLOPE =  0.0689
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     21.59
  FLOW VELOCITY(FEET/SEC.) =   2.89   FLOW DEPTH(FEET) =   0.39
  TRAVEL TIME(MIN.) =   5.01   Tc(MIN.) =  16.44
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20303.00 =  1951.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020303.0 TO NODE LR020303.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  16.44
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.739
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.15      0.61      1.00    66
```



```
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.80      0.75      0.90    56
  SCHOOL                     B       20.38      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.72
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   25.33      SUBAREA RUNOFF(CFS) =   28.64
  EFFECTIVE AREA(ACRES) =     40.46   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.76
  TOTAL AREA(ACRES) =     40.46       PEAK FLOW RATE(CFS) =      44.45

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020303.0 TO NODE LR020304.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2320.00  DOWNSTREAM(FEET) =   2280.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   981.07   CHANNEL SLOPE =  0.0408
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     44.45
  FLOW VELOCITY(FEET/SEC.) =   2.84   FLOW DEPTH(FEET) =   0.56
  TRAVEL TIME(MIN.) =   5.76   Tc(MIN.) =  22.21
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20304.00 =  2932.57 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020304.0 TO NODE LR020304.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  22.21
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.452
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       18.37      0.61      1.00    66
  SCHOOL                     B       15.66      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.66
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.82
  SUBAREA AREA(ACRES) =   34.03      SUBAREA RUNOFF(CFS) =   28.01
  EFFECTIVE AREA(ACRES) =     74.49   AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.78
  TOTAL AREA(ACRES) =     74.49       PEAK FLOW RATE(CFS) =      62.01

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020304.0 TO NODE LR020305.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2280.00  DOWNSTREAM(FEET) =   2220.00
```

```
  CHANNEL LENGTH THRU SUBAREA(FEET) =   823.37   CHANNEL SLOPE =  0.0729
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     62.01
  FLOW VELOCITY(FEET/SEC.) =   3.85   FLOW DEPTH(FEET) =   0.57
  TRAVEL TIME(MIN.) =   3.56   Tc(MIN.) =  25.77
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20305.00 =  3755.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020305.0 TO NODE LR020305.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  25.77
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.328
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        9.94      0.61      1.00    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        0.01      0.75      0.70    56
  SCHOOL                     B        7.91      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.66
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.82
  SUBAREA AREA(ACRES) =   17.86      SUBAREA RUNOFF(CFS) =   12.66
  EFFECTIVE AREA(ACRES) =     92.35   AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =     92.35       PEAK FLOW RATE(CFS) =      66.35

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020305.0 TO NODE LR020306.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2220.00  DOWNSTREAM(FEET) =   2190.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   801.97   CHANNEL SLOPE =  0.0374
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     66.35
  FLOW VELOCITY(FEET/SEC.) =   3.06   FLOW DEPTH(FEET) =   0.66
  TRAVEL TIME(MIN.) =   4.37   Tc(MIN.) =  30.14
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20306.00 =  4557.91 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020306.0 TO NODE LR020306.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  30.14
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.209
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```



```
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.66      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       13.33      0.61      1.00    66
  SCHOOL                     B        2.17      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.63
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.92
  SUBAREA AREA(ACRES) =   17.16      SUBAREA RUNOFF(CFS) =    9.65
  EFFECTIVE AREA(ACRES) =    109.51   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =    109.51       PEAK FLOW RATE(CFS) =      66.35
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020306.0 TO NODE LR020307.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2190.00  DOWNSTREAM(FEET) =   2185.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   181.13   CHANNEL SLOPE =  0.0276
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     66.35
  FLOW VELOCITY(FEET/SEC.) =   2.72   FLOW DEPTH(FEET) =   0.70
  TRAVEL TIME(MIN.) =   1.11   Tc(MIN.) =  31.26
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20307.00 =  4739.04 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020307.0 TO NODE LR020307.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  31.26
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.183
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.33      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.26      0.75      0.60    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.26      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.65
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.90
  SUBAREA AREA(ACRES) =    4.85      SUBAREA RUNOFF(CFS) =    2.63
  EFFECTIVE AREA(ACRES) =    114.36   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.82
  TOTAL AREA(ACRES) =    114.36       PEAK FLOW RATE(CFS) =      66.35
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR020307.0 TO NODE LR020308.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2185.00  DOWNSTREAM(FEET) =   2175.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   269.83   CHANNEL SLOPE =  0.0371
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   4.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     66.35
  FLOW VELOCITY(FEET/SEC.) =   3.04   FLOW DEPTH(FEET) =   0.66
  TRAVEL TIME(MIN.) =   1.48   Tc(MIN.) =  32.74
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20308.00 =  5008.87 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020308.0 TO NODE LR020308.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  32.74
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.151
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.10      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.65      0.75      0.60    56
  NATURAL FAIR COVER
  "OPEN BROWSH"              B        1.26      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.78
  SUBAREA AREA(ACRES) =    4.01      SUBAREA RUNOFF(CFS) =    2.20
  EFFECTIVE AREA(ACRES) =    118.37   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =    118.37       PEAK FLOW RATE(CFS) =      66.35
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020308.0 TO NODE LR020309.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2175.00  DOWNSTREAM ELEVATION(FEET) = 2150.00
  STREET LENGTH(FEET) =   430.92   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
```



```
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.67

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      67.82
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.55
    HALFSTREET FLOOD WIDTH(FEET) =   20.27
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.58
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.13
  STREET FLOW TRAVEL TIME(MIN.) =   0.95   Tc(MIN.) =  33.68
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.131
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BROWSH"              B        1.71      0.61      1.00    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.80      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.00      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.77
  SUBAREA AREA(ACRES) =    5.51      SUBAREA RUNOFF(CFS) =    2.94
  EFFECTIVE AREA(ACRES) =    123.88    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =    123.88       PEAK FLOW RATE(CFS) =      66.35
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.54   HALFSTREET FLOOD WIDTH(FEET) =  20.09
  FLOW VELOCITY(FEET/SEC.) =  7.54   DEPTH*VELOCITY(FT*FT/SEC.) =   4.08
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20309.00 =  5439.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020309.0 TO NODE LR020310.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2150.00  DOWNSTREAM ELEVATION(FEET) = 2140.00
  STREET LENGTH(FEET) =   330.10   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.80
```

```
  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      67.76
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.60
  HALFSTREET FLOOD WIDTH(FEET) =   22.84
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.07
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.62
 STREET FLOW TRAVEL TIME(MIN.) =   0.91   Tc(MIN.) =  34.59
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.113
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        3.69      0.75      0.70    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.85      0.61      1.00    66
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.79      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.72
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.73
 SUBAREA AREA(ACRES) =    5.33      SUBAREA RUNOFF(CFS) =    2.81
 EFFECTIVE AREA(ACRES) =    129.21    AREA-AVERAGED Fm(INCH/HR) =  0.54
 AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.81
 TOTAL AREA(ACRES) =    129.21        PEAK FLOW RATE(CFS) =      66.71

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.59   HALFSTREET FLOOD WIDTH(FEET) =  22.71
 FLOW VELOCITY(FEET/SEC.) =  6.04   DEPTH*VELOCITY(FT*FT/SEC.) =   3.59
 LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20310.00 =  5769.89 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020310.0 TO NODE LR020311.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2140.00  DOWNSTREAM ELEVATION(FEET) = 2100.00
 STREET LENGTH(FEET) =   329.50   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.56

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      68.01
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.50
  HALFSTREET FLOOD WIDTH(FEET) =   18.00
```



```
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.59
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.76
 STREET FLOW TRAVEL TIME(MIN.) =   0.57   Tc(MIN.) =  35.16
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.102
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        2.87      0.75      0.70    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        1.50      0.61      1.00    66
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.78      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.70
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.77
 SUBAREA AREA(ACRES) =    5.15      SUBAREA RUNOFF(CFS) =    2.61
 EFFECTIVE AREA(ACRES) =    134.36    AREA-AVERAGED Fm(INCH/HR) =  0.54
 AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.81
 TOTAL AREA(ACRES) =    134.36        PEAK FLOW RATE(CFS) =      68.05

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.50   HALFSTREET FLOOD WIDTH(FEET) =  18.00
 FLOW VELOCITY(FEET/SEC.) =  9.54   DEPTH*VELOCITY(FT*FT/SEC.) =   4.75
 LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20311.00 =  6099.39 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020311.0 TO NODE LR020312.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2100.00  DOWNSTREAM ELEVATION(FEET) = 2060.00
 STREET LENGTH(FEET) =   476.59   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.61

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      70.57
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.52
  HALFSTREET FLOOD WIDTH(FEET) =   19.24
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.68
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.55
 STREET FLOW TRAVEL TIME(MIN.) =   0.92   Tc(MIN.) =  36.08
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.086
 SUBAREA LOSS RATE DATA(AMC  II):
```

```
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        4.27      0.75       0.70    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        5.25      0.61       1.00    66
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.13      0.75       0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.84
 SUBAREA AREA(ACRES) =   10.65      SUBAREA RUNOFF(CFS) =    5.03
 EFFECTIVE AREA(ACRES) =    145.01    AREA-AVERAGED Fm(INCH/HR) =  0.54
 AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.81
 TOTAL AREA(ACRES) =    145.01        PEAK FLOW RATE(CFS) =      71.05

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.53   HALFSTREET FLOOD WIDTH(FEET) =  19.30
 FLOW VELOCITY(FEET/SEC.) =  8.69   DEPTH*VELOCITY(FT*FT/SEC.) =   4.57
 LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20312.00 =  6575.98 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020312.0 TO NODE LR020313.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2060.00  DOWNSTREAM ELEVATION(FEET) = 2040.00
 STREET LENGTH(FEET) =   500.29   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.74

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      73.52
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.59
   HALFSTREET FLOOD WIDTH(FEET) =   22.35
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.86
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.03
 STREET FLOW TRAVEL TIME(MIN.) =   1.22   Tc(MIN.) =  37.29
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.064
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        6.45      0.75       0.70    56
 RESIDENTIAL
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 "3-4 DWELLINGS/ACRE"       B        1.19      0.75       0.60    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        2.82      0.61       1.00    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.70
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.77
 SUBAREA AREA(ACRES) =   10.46      SUBAREA RUNOFF(CFS) =    4.94
 EFFECTIVE AREA(ACRES) =    155.47    AREA-AVERAGED Fm(INCH/HR) =  0.54
 AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.81
 TOTAL AREA(ACRES) =    155.47        PEAK FLOW RATE(CFS) =      73.20

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.59   HALFSTREET FLOOD WIDTH(FEET) =  22.29
 FLOW VELOCITY(FEET/SEC.) =  6.86   DEPTH*VELOCITY(FT*FT/SEC.) =   4.02
 LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20313.00 =  7076.27 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020313.0 TO NODE LR020314.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2040.00  DOWNSTREAM ELEVATION(FEET) = 2020.00
 STREET LENGTH(FEET) =   462.82   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.73

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      75.58
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.58
   HALFSTREET FLOOD WIDTH(FEET) =   22.23
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.12
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.16
 STREET FLOW TRAVEL TIME(MIN.) =   1.08   Tc(MIN.) =  38.38
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.046
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        3.76      0.61       1.00    66
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        5.77      0.75       0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.10      0.75       0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.80
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  SUBAREA AREA(ACRES) =   10.63      SUBAREA RUNOFF(CFS) =    4.77
  EFFECTIVE AREA(ACRES) =    166.10    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =    166.10        PEAK FLOW RATE(CFS) =      75.43

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.58   HALFSTREET FLOOD WIDTH(FEET) =  22.23
  FLOW VELOCITY(FEET/SEC.) =  7.11   DEPTH*VELOCITY(FT*FT/SEC.) =   4.16
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20314.00 =  7539.09 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020314.0 TO NODE LR020315.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2020.00  DOWNSTREAM ELEVATION(FEET) = 1980.00
  STREET LENGTH(FEET) =   511.41   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.62

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      77.51
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.54
    HALFSTREET FLOOD WIDTH(FEET) =   20.15
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.76
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.75
  STREET FLOW TRAVEL TIME(MIN.) =   0.97   Tc(MIN.) =  39.35
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.030
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.85      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.24      0.75      0.60    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.05      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.73
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.72
  SUBAREA AREA(ACRES) =    9.14      SUBAREA RUNOFF(CFS) =    4.17
  EFFECTIVE AREA(ACRES) =    175.24    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =    175.24        PEAK FLOW RATE(CFS) =      77.26
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  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.54   HALFSTREET FLOOD WIDTH(FEET) =  20.15
  FLOW VELOCITY(FEET/SEC.) =  8.73   DEPTH*VELOCITY(FT*FT/SEC.) =   4.74
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20315.00 =  8050.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020315.0 TO NODE LR020316.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1980.00  DOWNSTREAM ELEVATION(FEET) = 1950.00
  STREET LENGTH(FEET) =   522.61   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.67

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      78.93
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.57
    HALFSTREET FLOOD WIDTH(FEET) =   21.43
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.96
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.53
  STREET FLOW TRAVEL TIME(MIN.) =   1.09   Tc(MIN.) =  40.44
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.014
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.12      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.25      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    7.37      SUBAREA RUNOFF(CFS) =    3.33
  EFFECTIVE AREA(ACRES) =    182.61    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =    182.61        PEAK FLOW RATE(CFS) =      77.94

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.57   HALFSTREET FLOOD WIDTH(FEET) =  21.37
  FLOW VELOCITY(FEET/SEC.) =  7.90   DEPTH*VELOCITY(FT*FT/SEC.) =   4.48
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20316.00 =  8573.11 FEET.
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****************************************************************************
  FLOW PROCESS FROM NODE LR020316.0 TO NODE LR020317.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1950.00  DOWNSTREAM ELEVATION(FEET) = 1890.00
  STREET LENGTH(FEET) =   743.58   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.62

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      79.19
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.54
    HALFSTREET FLOOD WIDTH(FEET) =   20.21
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.90
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.84
  STREET FLOW TRAVEL TIME(MIN.) =   1.39   Tc(MIN.) =  41.84
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.993
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.10      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.55      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.01      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA AREA(ACRES) =    5.66      SUBAREA RUNOFF(CFS) =    2.50
  EFFECTIVE AREA(ACRES) =    188.27    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =    188.27        PEAK FLOW RATE(CFS) =      77.94
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.54   HALFSTREET FLOOD WIDTH(FEET) =  20.09
  FLOW VELOCITY(FEET/SEC.) =  8.85   DEPTH*VELOCITY(FT*FT/SEC.) =   4.80
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20317.00 =  9316.69 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020317.0 TO NODE LR020318.0 IS CODE =  63
----------------------------------------------------------------------------
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  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1890.00  DOWNSTREAM ELEVATION(FEET) = 1860.00
  STREET LENGTH(FEET) =   640.63   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.71

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      80.41
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.59
    HALFSTREET FLOOD WIDTH(FEET) =   22.41
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.46
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.39
  STREET FLOW TRAVEL TIME(MIN.) =   1.43   Tc(MIN.) =  43.27
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.973
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.10      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.01      0.75      0.90    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       10.92      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =   12.03      SUBAREA RUNOFF(CFS) =    4.94
  EFFECTIVE AREA(ACRES) =    200.30    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =    200.30        PEAK FLOW RATE(CFS) =      78.67

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.58   HALFSTREET FLOOD WIDTH(FEET) =  22.23
  FLOW VELOCITY(FEET/SEC.) =  7.41   DEPTH*VELOCITY(FT*FT/SEC.) =   4.33
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20318.00 =  9957.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020318.0 TO NODE LR020319.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1860.00  DOWNSTREAM ELEVATION(FEET) = 1835.00
  STREET LENGTH(FEET) =   624.00   CURB HEIGHT(INCHES) =  8.0
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  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.78

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     107.91
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.70
    HALFSTREET FLOOD WIDTH(FEET) =   27.77
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.10
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.98
  STREET FLOW TRAVEL TIME(MIN.) =   1.46   Tc(MIN.) =  44.73
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.954
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.46      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        9.05      0.75      0.90    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B      128.82      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       18.27      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.73
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.75
  SUBAREA AREA(ACRES) =  157.60      SUBAREA RUNOFF(CFS) =   58.46
  EFFECTIVE AREA(ACRES) =    357.90    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.77
  TOTAL AREA(ACRES) =    357.90        PEAK FLOW RATE(CFS) =     133.66

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.74   HALFSTREET FLOOD WIDTH(FEET) =  29.72
  FLOW VELOCITY(FEET/SEC.) =  7.66   DEPTH*VELOCITY(FT*FT/SEC.) =   5.68
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  624.0 FT WITH ELEVATION-DROP =  25.0 FT, IS  250.0 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20319.00
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20319.00 = 10581.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020319.0 TO NODE LR020330.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1835.00  DOWNSTREAM ELEVATION(FEET) = 1813.00
  STREET LENGTH(FEET) =   597.75   CURB HEIGHT(INCHES) =  8.0
```



```
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.79

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     134.16
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.75
    HALFSTREET FLOOD WIDTH(FEET) =   30.21
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.44
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.59
  STREET FLOW TRAVEL TIME(MIN.) =   1.34   Tc(MIN.) =  46.07
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.937
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.71      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.91      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.84
  SUBAREA AREA(ACRES) =    3.62      SUBAREA RUNOFF(CFS) =    1.00
  EFFECTIVE AREA(ACRES) =    361.52    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.77
  TOTAL AREA(ACRES) =    361.52        PEAK FLOW RATE(CFS) =     133.66
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.75   HALFSTREET FLOOD WIDTH(FEET) =  30.15
  FLOW VELOCITY(FEET/SEC.) =  7.44   DEPTH*VELOCITY(FT*FT/SEC.) =   5.58
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20330.00 = 11179.07 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020330.0 TO NODE LR020330.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  46.07
  RAINFALL INTENSITY(INCH/HR) =   0.94
  AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.70
  AREA-AVERAGED Ap =  0.77
  EFFECTIVE STREAM AREA(ACRES) =   361.52
  TOTAL STREAM AREA(ACRES) =   361.52
```

```
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    133.66

****************************************************************************
  FLOW PROCESS FROM NODE LR020320.0 TO NODE LR020321.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1020.45
  ELEVATION DATA: UPSTREAM(FEET) =   2240.00  DOWNSTREAM(FEET) =   2180.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   19.882
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.552
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        9.71      0.61      1.00    66   19.88
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
  SUBAREA RUNOFF(CFS) =      8.20
  TOTAL AREA(ACRES) =      9.71   PEAK FLOW RATE(CFS) =      8.20

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020321.0 TO NODE LR020322.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2180.00  DOWNSTREAM(FEET) =   2160.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   548.49   CHANNEL SLOPE =  0.0365
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      8.20
  FLOW VELOCITY(FEET/SEC.) =   1.79   FLOW DEPTH(FEET) =   0.30
  TRAVEL TIME(MIN.) =   5.10   Tc(MIN.) =  24.98
  LONGEST FLOWPATH FROM NODE  20320.00 TO NODE  20322.00 =  1568.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020322.0 TO NODE LR020322.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  24.98
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.353
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       15.34      0.61      1.00    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        0.02      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.00
```



```
  SUBAREA AREA(ACRES) =   15.36      SUBAREA RUNOFF(CFS) =   10.22
  EFFECTIVE AREA(ACRES) =     25.07   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     25.07       PEAK FLOW RATE(CFS) =      16.69

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020322.0 TO NODE LR020323.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2160.00  DOWNSTREAM(FEET) =   2150.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   479.58   CHANNEL SLOPE =  0.0209
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     16.69
  FLOW VELOCITY(FEET/SEC.) =   1.73   FLOW DEPTH(FEET) =   0.44
  TRAVEL TIME(MIN.) =   4.63   Tc(MIN.) =  29.61
  LONGEST FLOWPATH FROM NODE  20320.00 TO NODE  20323.00 =  2048.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020323.0 TO NODE LR020323.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  29.61
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.222
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       11.74      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        8.32      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.68
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.82
  SUBAREA AREA(ACRES) =   20.06      SUBAREA RUNOFF(CFS) =   11.94
  EFFECTIVE AREA(ACRES) =     45.13   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.64  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     45.13       PEAK FLOW RATE(CFS) =      25.66

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020323.0 TO NODE LR020324.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2150.00  DOWNSTREAM(FEET) =   2100.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   676.85   CHANNEL SLOPE =  0.0739
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     25.66
```

```
  FLOW VELOCITY(FEET/SEC.) =   3.09   FLOW DEPTH(FEET) =   0.41
  TRAVEL TIME(MIN.) =   3.65   Tc(MIN.) =  33.25
  LONGEST FLOWPATH FROM NODE  20320.00 TO NODE  20324.00 =  2725.37 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020324.0 TO NODE LR020324.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  33.25
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.140
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       14.74      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   14.74      SUBAREA RUNOFF(CFS) =    8.18
  EFFECTIVE AREA(ACRES) =     59.87   AREA-AVERAGED Fm(INCH/HR) =  0.57
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =     59.87       PEAK FLOW RATE(CFS) =      30.50

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020324.0 TO NODE LR020325.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2100.00  DOWNSTREAM(FEET) =   2080.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   631.62   CHANNEL SLOPE =  0.0317
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     30.50
  FLOW VELOCITY(FEET/SEC.) =   2.36   FLOW DEPTH(FEET) =   0.51
  TRAVEL TIME(MIN.) =   4.46   Tc(MIN.) =  37.71
  LONGEST FLOWPATH FROM NODE  20320.00 TO NODE  20325.00 =  3356.99 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020325.0 TO NODE LR020325.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  37.71
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.057
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       10.91      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   10.91      SUBAREA RUNOFF(CFS) =    5.24
  EFFECTIVE AREA(ACRES) =     70.78   AREA-AVERAGED Fm(INCH/HR) =  0.57
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.84
```



```
  TOTAL AREA(ACRES) =     70.78       PEAK FLOW RATE(CFS) =      31.27

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020325.0 TO NODE LR020326.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2080.00  DOWNSTREAM(FEET) =   2050.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   686.64   CHANNEL SLOPE =  0.0437
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     31.27
  FLOW VELOCITY(FEET/SEC.) =   2.67   FLOW DEPTH(FEET) =   0.48
  TRAVEL TIME(MIN.) =   4.28   Tc(MIN.) =  41.99
  LONGEST FLOWPATH FROM NODE  20320.00 TO NODE  20326.00 =  4043.63 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020326.0 TO NODE LR020326.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  41.99
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.991
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       48.19      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.06      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   48.25      SUBAREA RUNOFF(CFS) =   20.30
  EFFECTIVE AREA(ACRES) =    119.03   AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.78
  TOTAL AREA(ACRES) =    119.03       PEAK FLOW RATE(CFS) =      47.37

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020326.0 TO NODE LR020327.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2050.00  DOWNSTREAM(FEET) =   1990.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1389.79   CHANNEL SLOPE =  0.0432
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     47.37
  FLOW VELOCITY(FEET/SEC.) =   2.94   FLOW DEPTH(FEET) =   0.57
  TRAVEL TIME(MIN.) =   7.87   Tc(MIN.) =  49.86
  LONGEST FLOWPATH FROM NODE  20320.00 TO NODE  20327.00 =  5433.42 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR020327.0 TO NODE LR020327.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  49.86
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.894
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       16.19      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   16.19      SUBAREA RUNOFF(CFS) =    5.40
  EFFECTIVE AREA(ACRES) =    135.22   AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.77
  TOTAL AREA(ACRES) =    135.22       PEAK FLOW RATE(CFS) =      47.37
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020327.0 TO NODE LR020328.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1990.00  DOWNSTREAM(FEET) =   1920.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1079.99   CHANNEL SLOPE =  0.0648
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     47.37
  FLOW VELOCITY(FEET/SEC.) =   3.46   FLOW DEPTH(FEET) =   0.52
  TRAVEL TIME(MIN.) =   5.21   Tc(MIN.) =  55.07
  LONGEST FLOWPATH FROM NODE  20320.00 TO NODE  20328.00 =  6513.41 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020328.0 TO NODE LR020328.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  55.07
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.842
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       25.33      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.27      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   25.60      SUBAREA RUNOFF(CFS) =    7.36
  EFFECTIVE AREA(ACRES) =    160.82   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.76
```



```
  TOTAL AREA(ACRES) =    160.82       PEAK FLOW RATE(CFS) =      47.37
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020328.0 TO NODE LR020329.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1920.00  DOWNSTREAM ELEVATION(FEET) = 1870.00
  STREET LENGTH(FEET) =  1075.25   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.71

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      49.19
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.52
    HALFSTREET FLOOD WIDTH(FEET) =   18.81
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.30
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.25
  STREET FLOW TRAVEL TIME(MIN.) =   2.84   Tc(MIN.) =  57.91
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.817
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       13.84      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   13.84      SUBAREA RUNOFF(CFS) =    3.66
  EFFECTIVE AREA(ACRES) =    174.66    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.76
  TOTAL AREA(ACRES) =    174.66       PEAK FLOW RATE(CFS) =      47.37
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.51   HALFSTREET FLOOD WIDTH(FEET) =  18.56
  FLOW VELOCITY(FEET/SEC.) =  6.21   DEPTH*VELOCITY(FT*FT/SEC.) =   3.18
  LONGEST FLOWPATH FROM NODE  20320.00 TO NODE  20329.00 =  7588.66 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020329.0 TO NODE LR020330.0 IS CODE =  63
```

```
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1870.00  DOWNSTREAM ELEVATION(FEET) = 1813.00
  STREET LENGTH(FEET) =   927.52   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.66

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      49.17
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.50
    HALFSTREET FLOOD WIDTH(FEET) =   18.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.85
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.42
  STREET FLOW TRAVEL TIME(MIN.) =   2.26   Tc(MIN.) =  60.17
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.799
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.48      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        5.88      0.75      0.90    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       11.27      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.76
  SUBAREA AREA(ACRES) =   17.63      SUBAREA RUNOFF(CFS) =    3.60
  EFFECTIVE AREA(ACRES) =    192.29    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.76
  TOTAL AREA(ACRES) =    192.29        PEAK FLOW RATE(CFS) =      47.37
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.49   HALFSTREET FLOOD WIDTH(FEET) =  18.00
  FLOW VELOCITY(FEET/SEC.) =  6.76   DEPTH*VELOCITY(FT*FT/SEC.) =   3.34
  LONGEST FLOWPATH FROM NODE  20320.00 TO NODE  20330.00 =  8516.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020330.0 TO NODE LR020330.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
```



```
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  60.17
  RAINFALL INTENSITY(INCH/HR) =   0.80
  AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.72
  AREA-AVERAGED Ap =  0.76
  EFFECTIVE STREAM AREA(ACRES) =   192.29
  TOTAL STREAM AREA(ACRES) =   192.29
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     47.37

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    133.66  46.07    0.937  0.70( 0.54) 0.77   361.5 LR020300.0
      2     47.37  60.17    0.799  0.72( 0.54) 0.76   192.3 LR020320.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    181.02  46.07    0.937  0.71( 0.54) 0.77   508.8 LR020300.0
      2    134.35  60.17    0.799  0.71( 0.54) 0.77   553.8 LR020320.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    181.02    Tc(MIN.) =    46.07
  EFFECTIVE AREA(ACRES) =   508.75   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.77
  TOTAL AREA(ACRES) =    553.81
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20330.00 = 11179.07 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020330.0 TO NODE LR020349.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1813.00  DOWNSTREAM ELEVATION(FEET) = 1785.00
  STREET LENGTH(FEET) =  1334.61   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.91

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     183.38
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.89
    HALFSTREET FLOOD WIDTH(FEET) =   37.05
```

```
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.74
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.98
 STREET FLOW TRAVEL TIME(MIN.) =   3.30   Tc(MIN.) =  49.37
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.899
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.05      0.75      0.60    56
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B       12.65      0.75      0.70    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
 SUBAREA AREA(ACRES) =   13.70      SUBAREA RUNOFF(CFS) =    4.70
 EFFECTIVE AREA(ACRES) =    522.45    AREA-AVERAGED Fm(INCH/HR) =  0.54
 AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.76
 TOTAL AREA(ACRES) =    567.51        PEAK FLOW RATE(CFS) =     181.02
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.88   HALFSTREET FLOOD WIDTH(FEET) =  36.86
 FLOW VELOCITY(FEET/SEC.) =  6.72   DEPTH*VELOCITY(FT*FT/SEC.) =   5.94
 LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20349.00 = 12513.68 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020349.0 TO NODE LR020349.0 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  49.37
 RAINFALL INTENSITY(INCH/HR) =   0.90
 AREA-AVERAGED Fm(INCH/HR) =  0.54
 AREA-AVERAGED Fp(INCH/HR) =  0.71
 AREA-AVERAGED Ap =  0.76
 EFFECTIVE STREAM AREA(ACRES) =   522.45
 TOTAL STREAM AREA(ACRES) =   567.51
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    181.02

****************************************************************************
 FLOW PROCESS FROM NODE LR020340.0 TO NODE LR020341.0 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   998.88
 ELEVATION DATA: UPSTREAM(FEET) =   2120.00  DOWNSTREAM(FEET) =   2080.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.422
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.058
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
```



```
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        6.76      0.75      0.70    56   13.21
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.12      0.75      0.60    56   12.42
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
 SUBAREA RUNOFF(CFS) =     10.96
 TOTAL AREA(ACRES) =      7.88   PEAK FLOW RATE(CFS) =     10.96

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
 FLOW PROCESS FROM NODE LR020341.0 TO NODE LR020342.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   2080.00  DOWNSTREAM(FEET) =   2055.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   397.26   CHANNEL SLOPE =  0.0629
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
 MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
 CHANNEL FLOW THRU SUBAREA(CFS) =     10.96
 FLOW VELOCITY(FEET/SEC.) =   2.40   FLOW DEPTH(FEET) =   0.30
 TRAVEL TIME(MIN.) =   2.76   Tc(MIN.) =  15.18
 LONGEST FLOWPATH FROM NODE  20340.00 TO NODE  20342.00 =  1396.14 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020342.0 TO NODE LR020342.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  15.18
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.825
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        4.25      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.25      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
 SUBAREA AREA(ACRES) =    4.50      SUBAREA RUNOFF(CFS) =    5.29
 EFFECTIVE AREA(ACRES) =     12.38   AREA-AVERAGED Fm(INCH/HR) =  0.52
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
 TOTAL AREA(ACRES) =     12.38       PEAK FLOW RATE(CFS) =      14.59

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
 FLOW PROCESS FROM NODE LR020342.0 TO NODE LR020343.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   2055.00  DOWNSTREAM(FEET) =   2035.00
```

```
  CHANNEL LENGTH THRU SUBAREA(FEET) =   438.38   CHANNEL SLOPE =  0.0456
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     14.59
  FLOW VELOCITY(FEET/SEC.) =   2.23   FLOW DEPTH(FEET) =   0.36
  TRAVEL TIME(MIN.) =   3.27   Tc(MIN.) =  18.45
  LONGEST FLOWPATH FROM NODE  20340.00 TO NODE  20343.00 =  1834.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020343.0 TO NODE LR020343.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  18.45
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.623
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.37      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.37      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    5.74      SUBAREA RUNOFF(CFS) =    5.70
  EFFECTIVE AREA(ACRES) =     18.12   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     18.12       PEAK FLOW RATE(CFS) =      18.05

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020343.0 TO NODE LR020344.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2035.00  DOWNSTREAM(FEET) =   2015.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   496.72   CHANNEL SLOPE =  0.0403
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     18.05
  FLOW VELOCITY(FEET/SEC.) =   2.26   FLOW DEPTH(FEET) =   0.40
  TRAVEL TIME(MIN.) =   3.66   Tc(MIN.) =  22.12
  LONGEST FLOWPATH FROM NODE  20340.00 TO NODE  20344.00 =  2331.24 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020344.0 TO NODE LR020344.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  22.12
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.456
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
```



```
  "2 DWELLINGS/ACRE"         B        2.06      0.75      0.70    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.77      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.07      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.81
  SUBAREA AREA(ACRES) =    4.90      SUBAREA RUNOFF(CFS) =    3.74
  EFFECTIVE AREA(ACRES) =     23.02   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.72
  TOTAL AREA(ACRES) =     23.02       PEAK FLOW RATE(CFS) =      19.07

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020344.0 TO NODE LR020345.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2015.00  DOWNSTREAM(FEET) =   1980.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   575.06   CHANNEL SLOPE =  0.0609
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     19.07
  FLOW VELOCITY(FEET/SEC.) =   2.69   FLOW DEPTH(FEET) =   0.38
  TRAVEL TIME(MIN.) =   3.57   Tc(MIN.) =  25.68
  LONGEST FLOWPATH FROM NODE  20340.00 TO NODE  20345.00 =  2906.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020345.0 TO NODE LR020345.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  25.68
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.331
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       12.00      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.27      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        3.29      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.74
  SUBAREA AREA(ACRES) =   15.56      SUBAREA RUNOFF(CFS) =   10.88
  EFFECTIVE AREA(ACRES) =     38.58   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =     38.58       PEAK FLOW RATE(CFS) =      27.36

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020345.0 TO NODE LR020346.0 IS CODE =  54
```

```
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1980.00  DOWNSTREAM(FEET) =   1940.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   558.59   CHANNEL SLOPE =  0.0716
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     27.36
  FLOW VELOCITY(FEET/SEC.) =   3.15   FLOW DEPTH(FEET) =   0.42
  TRAVEL TIME(MIN.) =   2.96   Tc(MIN.) =  28.64
  LONGEST FLOWPATH FROM NODE  20340.00 TO NODE  20346.00 =  3464.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020346.0 TO NODE LR020346.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  28.64
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.247
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        3.53      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.62      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        3.41      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.78
  SUBAREA AREA(ACRES) =    7.56      SUBAREA RUNOFF(CFS) =    4.50
  EFFECTIVE AREA(ACRES) =     46.14   AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.74
  TOTAL AREA(ACRES) =     46.14       PEAK FLOW RATE(CFS) =      28.94

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020346.0 TO NODE LR020347.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1940.00  DOWNSTREAM ELEVATION(FEET) = 1890.00
  STREET LENGTH(FEET) =   993.62   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70
```



```
    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      31.96
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.46
    HALFSTREET FLOOD WIDTH(FEET) =   16.48
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.64
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.57
  STREET FLOW TRAVEL TIME(MIN.) =   2.94   Tc(MIN.) =  31.57
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.176
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.71      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.04      0.75      0.70    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.62      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.71
  SUBAREA AREA(ACRES) =   10.37      SUBAREA RUNOFF(CFS) =    6.05
  EFFECTIVE AREA(ACRES) =     56.51    AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =     56.51        PEAK FLOW RATE(CFS) =      32.05

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.46   HALFSTREET FLOOD WIDTH(FEET) =  16.55
  FLOW VELOCITY(FEET/SEC.) =  5.61   DEPTH*VELOCITY(FT*FT/SEC.) =   2.56
  LONGEST FLOWPATH FROM NODE  20340.00 TO NODE  20347.00 =  4458.51 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020347.0 TO NODE LR020348.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1890.00  DOWNSTREAM ELEVATION(FEET) = 1860.00
  STREET LENGTH(FEET) =   874.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.78

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      35.66
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.50
    HALFSTREET FLOOD WIDTH(FEET) =   18.00
```

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   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.06
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.51
 STREET FLOW TRAVEL TIME(MIN.) =   2.88   Tc(MIN.) =  34.45
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.116
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.78      0.75      0.60    56
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B       12.66      0.75      0.70    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
 SUBAREA AREA(ACRES) =   13.44      SUBAREA RUNOFF(CFS) =    7.22
 EFFECTIVE AREA(ACRES) =     69.95    AREA-AVERAGED Fm(INCH/HR) =  0.54
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.72
 TOTAL AREA(ACRES) =     69.95        PEAK FLOW RATE(CFS) =      36.21

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.50   HALFSTREET FLOOD WIDTH(FEET) =  18.00
 FLOW VELOCITY(FEET/SEC.) =  5.08   DEPTH*VELOCITY(FT*FT/SEC.) =   2.53
 LONGEST FLOWPATH FROM NODE  20340.00 TO NODE  20348.00 =  5333.01 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020348.0 TO NODE LR020349.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1860.00  DOWNSTREAM ELEVATION(FEET) = 1785.00
 STREET LENGTH(FEET) =  1082.38   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.64

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      44.47
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.48
   HALFSTREET FLOOD WIDTH(FEET) =   17.65
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.88
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.30
 STREET FLOW TRAVEL TIME(MIN.) =   2.62   Tc(MIN.) =  37.08
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.068
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
```



```
 "2 DWELLINGS/ACRE"         B       33.09      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.55      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
 SUBAREA AREA(ACRES) =   33.64      SUBAREA RUNOFF(CFS) =   16.52
 EFFECTIVE AREA(ACRES) =    103.59    AREA-AVERAGED Fm(INCH/HR) =  0.53
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.71
 TOTAL AREA(ACRES) =    103.59        PEAK FLOW RATE(CFS) =      49.70

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.49   HALFSTREET FLOOD WIDTH(FEET) =  18.00
 FLOW VELOCITY(FEET/SEC.) =  7.14   DEPTH*VELOCITY(FT*FT/SEC.) =   3.52
 LONGEST FLOWPATH FROM NODE  20340.00 TO NODE  20349.00 =  6415.39 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020349.0 TO NODE LR020349.0 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  37.08
 RAINFALL INTENSITY(INCH/HR) =   1.07
 AREA-AVERAGED Fm(INCH/HR) =  0.53
 AREA-AVERAGED Fp(INCH/HR) =  0.75
 AREA-AVERAGED Ap =  0.71
 EFFECTIVE STREAM AREA(ACRES) =   103.59
 TOTAL STREAM AREA(ACRES) =   103.59
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     49.70

 ** CONFLUENCE DATA **
  STREAM     Q      Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
     1    181.02  49.37    0.899  0.71( 0.54) 0.76   522.5 LR020300.0
     1    134.35  63.77    0.771  0.71( 0.54) 0.76   567.5 LR020320.0
     2     49.70  37.08    1.068  0.75( 0.53) 0.71   103.6 LR020340.0

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q      Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
  NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
     1    230.73  37.08    1.068  0.72( 0.54) 0.75   495.9 LR020340.0
     2    215.01  49.37    0.899  0.71( 0.54) 0.76   626.0 LR020300.0
     3    156.40  63.77    0.771  0.71( 0.54) 0.76   671.1 LR020320.0

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    230.73    Tc(MIN.) =    37.08
 EFFECTIVE AREA(ACRES) =   495.93   AREA-AVERAGED Fm(INCH/HR) =  0.54
 AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.75
 TOTAL AREA(ACRES) =    671.10
 LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20349.00 = 12513.68 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR020349.0 TO NODE LR020349.0 IS CODE =  71
----------------------------------------------------------------------------
  >>>>>PEAK FLOW RATE ESTIMATOR CHANGED TO UNIT-HYDROGRAPH METHOD<<<<<
  >>>>>USING TIME-OF-CONCENTRATION OF LONGEST FLOWPATH<<<<<
============================================================================
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.43;6H= 2.06;24H= 4.43
  S-GRAPH: VALLEY(DEV.)= 76.1%;VALLEY(UNDEV.)/DESERT= 23.9%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.82; LAG(HR) = 0.66; Fm(INCH/HR) = 0.54; Ybar = 0.61
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 1.00; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    671.10
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20349.00 = 12513.68 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0682; Lca/L=0.4,n=.0612; Lca/L=0.5,n=.0562;Lca/L=0.6,n=.0524
  TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =     103.64
  UNIT-HYDROGRAPH METHOD PEAK FLOW RATE(CFS) =    344.47
  TOTAL PEAK FLOW RATE(CFS) =    344.47 (SOURCE FLOW INCLUDED)
  RATIONAL METHOD PEAK FLOW RATE(CFS) =    230.73
   (UPSTREAM NODE PEAK FLOW RATE(CFS) =    230.73)
  PEAK FLOW RATE(CFS) USED =    344.47

****************************************************************************
  FLOW PROCESS FROM NODE LR020349.0 TO NODE LR020350.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1785.00  DOWNSTREAM ELEVATION(FEET) = 1715.00
  STREET LENGTH(FEET) =  1290.16   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.68

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     352.04
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.91
    HALFSTREET FLOOD WIDTH(FEET) =   38.64
    AVERAGE FLOW VELOCITY(FEET/SEC.) =   11.51
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   10.50
  STREET FLOW TRAVEL TIME(MIN.) =   1.87   Tc(MIN.) =  51.24
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.879
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
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RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        4.52      0.75      0.60    56
RESIDENTIAL
".4 DWELLING/ACRE"         B       72.05      0.75      0.90    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.88
UNIT-HYDROGRAPH DATA:
RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.43;6H= 2.06;24H= 4.43
S-GRAPH: VALLEY(DEV.)= 68.9%;VALLEY(UNDEV.)/DESERT= 31.1%
         MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
Tc(HR) = 0.85; LAG(HR) = 0.68; Fm(INCH/HR) = 0.55; Ybar = 0.63
USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
3HR = 0.99; 6HR = 1.00; 24HR= 1.00
UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    747.67
LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20350.00 = 12513.68 FEET.
 EQUIVALENT BASIN FACTOR APPROXIMATIONS:
 Lca/L=0.3,n=.0719; Lca/L=0.4,n=.0645; Lca/L=0.5,n=.0592;Lca/L=0.6,n=.0553
TIME OF PEAK FLOW(HR) = 16.75  RUNOFF VOLUME(AF) =     112.08
UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    364.86
TOTAL AREA(ACRES) =    747.67        PEAK FLOW RATE(CFS) =     364.86

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.92   HALFSTREET FLOOD WIDTH(FEET) =  39.19
FLOW VELOCITY(FEET/SEC.) = 11.60   DEPTH*VELOCITY(FT*FT/SEC.) =  10.72

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.68
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  23.50
PIPE-FLOW(CFS) =    259.73
PIPEFLOW TRAVEL TIME(MIN.) =   0.92    Tc(MIN.) =  50.29
UNIT-HYDROGRAPH DATA:
RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.43;6H= 2.06;24H= 4.43
S-GRAPH: VALLEY(DEV.)= 68.9%;VALLEY(UNDEV.)/DESERT= 31.1%
         MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
Tc(HR) = 0.82; LAG(HR) = 0.66; Fm(INCH/HR) = 0.55; Ybar = 0.63
USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
3HR = 0.99; 6HR = 1.00; 24HR= 1.00
UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    747.67
LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20350.00 = 13803.84 FEET.
 EQUIVALENT BASIN FACTOR APPROXIMATIONS:
 Lca/L=0.3,n=.0631; Lca/L=0.4,n=.0566; Lca/L=0.5,n=.0520;Lca/L=0.6,n=.0485
TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =     112.08
TOTAL AREA(ACRES) =    747.67        PEAK FLOW RATE(CFS) =    363.69

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  103.96
  ***STREET FLOWING FULL***
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    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.62
    HALFSTREET FLOOD WIDTH(FEET) =   24.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.49
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.26

****************************************************************************
  FLOW PROCESS FROM NODE LR020350.0 TO NODE LR020351.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1715.00  DOWNSTREAM ELEVATION(FEET) = 1680.00
  STREET LENGTH(FEET) =  1342.03   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     371.24
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.05
    HALFSTREET FLOOD WIDTH(FEET) =   45.66
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.75
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    9.21
  STREET FLOW TRAVEL TIME(MIN.) =   2.56   Tc(MIN.) =  52.85
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.863
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        7.14      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       72.56      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.87
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.43;6H= 2.06;24H= 4.43
  S-GRAPH: VALLEY(DEV.)= 63.2%;VALLEY(UNDEV.)/DESERT= 36.8%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.88; LAG(HR) = 0.70; Fm(INCH/HR) = 0.56; Ybar = 0.64
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    827.37
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20351.00 = 13803.84 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0681; Lca/L=0.4,n=.0610; Lca/L=0.5,n=.0561;Lca/L=0.6,n=.0523
  TIME OF PEAK FLOW(HR) = 16.75  RUNOFF VOLUME(AF) =     121.04
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    388.81
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  TOTAL AREA(ACRES) =    827.37        PEAK FLOW RATE(CFS) =     388.81

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.07   HALFSTREET FLOOD WIDTH(FEET) =  46.52
  FLOW VELOCITY(FEET/SEC.) =  8.83   DEPTH*VELOCITY(FT*FT/SEC.) =   9.46

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.84
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.40
  PIPE-FLOW(CFS) =    292.83
  PIPEFLOW TRAVEL TIME(MIN.) =   1.22    Tc(MIN.) =  51.51
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.43;6H= 2.06;24H= 4.43
  S-GRAPH: VALLEY(DEV.)= 63.2%;VALLEY(UNDEV.)/DESERT= 36.8%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.84; LAG(HR) = 0.67; Fm(INCH/HR) = 0.56; Ybar = 0.64
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    827.37
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20351.00 = 15145.87 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0593; Lca/L=0.4,n=.0532; Lca/L=0.5,n=.0489;Lca/L=0.6,n=.0456
  TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =     121.04
  TOTAL AREA(ACRES) =    827.37        PEAK FLOW RATE(CFS) =    392.15

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   99.32
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.68
    HALFSTREET FLOOD WIDTH(FEET) =   27.17
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.41
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.38

****************************************************************************
  FLOW PROCESS FROM NODE LR020351.0 TO NODE LR020352.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1680.00  DOWNSTREAM ELEVATION(FEET) = 1655.00
  STREET LENGTH(FEET) =  1091.03   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
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SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     393.58
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  1.10
  HALFSTREET FLOOD WIDTH(FEET) =   47.92
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.43
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    9.27
STREET FLOW TRAVEL TIME(MIN.) =   2.16   Tc(MIN.) =  53.66
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.855
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
".4 DWELLING/ACRE"         B       15.77      0.75      0.90    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        0.71      0.75      0.60    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.89
UNIT-HYDROGRAPH DATA:
RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.43;6H= 2.06;24H= 4.43
S-GRAPH: VALLEY(DEV.)= 62.0%;VALLEY(UNDEV.)/DESERT= 38.0%
         MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
Tc(HR) = 0.89; LAG(HR) = 0.72; Fm(INCH/HR) = 0.56; Ybar = 0.64
USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
3HR = 0.99; 6HR = 1.00; 24HR= 1.00
UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    843.85
LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20352.00 = 15145.87 FEET.
 EQUIVALENT BASIN FACTOR APPROXIMATIONS:
 Lca/L=0.3,n=.0636; Lca/L=0.4,n=.0570; Lca/L=0.5,n=.0524;Lca/L=0.6,n=.0489
TIME OF PEAK FLOW(HR) = 16.75  RUNOFF VOLUME(AF) =     122.83
UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    391.06
TOTAL AREA(ACRES) =    843.85        PEAK FLOW RATE(CFS) =     392.15
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.10   HALFSTREET FLOOD WIDTH(FEET) =  47.86
FLOW VELOCITY(FEET/SEC.) =  8.43   DEPTH*VELOCITY(FT*FT/SEC.) =   9.24

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.87
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  17.88
PIPE-FLOW(CFS) =    317.06
PIPEFLOW TRAVEL TIME(MIN.) =   1.02    Tc(MIN.) =  52.52
UNIT-HYDROGRAPH DATA:
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  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.43;6H= 2.06;24H= 4.43
  S-GRAPH: VALLEY(DEV.)= 62.0%;VALLEY(UNDEV.)/DESERT= 38.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.86; LAG(HR) = 0.69; Fm(INCH/HR) = 0.56; Ybar = 0.64
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    843.85
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20352.00 = 16236.90 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0572; Lca/L=0.4,n=.0512; Lca/L=0.5,n=.0471;Lca/L=0.6,n=.0439
  TIME OF PEAK FLOW(HR) = 16.75  RUNOFF VOLUME(AF) =     122.83
  TOTAL AREA(ACRES) =    843.85        PEAK FLOW RATE(CFS) =    395.42

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   78.36
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.65
    HALFSTREET FLOOD WIDTH(FEET) =   25.40
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.75
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.72

****************************************************************************
  FLOW PROCESS FROM NODE LR020352.0 TO NODE LR020352.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020274.0 TO NODE LR020274.0 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20274.dna
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1321.98    Tc(MIN.) =  48.00
  AREA-AVERAGED Fm(INCH/HR) =  0.59    Ybar = 0.65
  TOTAL AREA(ACRES) =    3101.93
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20274.00 = 19473.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020274.0 TO NODE LR020274.0 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1321.98    Tc(MIN.) =  48.00
  AREA-AVERAGED Fm(INCH/HR) =  0.59    Ybar = 0.65
  TOTAL AREA(ACRES) =    3101.93
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20274.00 = 19473.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020274.0 TO NODE LR020274.0 IS CODE =  12
----------------------------------------------------------------------------
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  >>>>>CLEAR MEMORY BANK # 2 <<<<<
================================================================================

********************************************************************************
  FLOW PROCESS FROM NODE LR020274.0 TO NODE LR020352.0 IS CODE =  54
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1670.00  DOWNSTREAM(FEET) =   1655.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   623.43   CHANNEL SLOPE =  0.0241
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   1321.98
  FLOW VELOCITY(FEET/SEC.) =  25.53   FLOW DEPTH(FEET) =   3.17
  TRAVEL TIME(MIN.) =   0.41   Tc(MIN.) =  48.41
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20352.00 = 20097.32 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE LR020352.0 TO NODE LR020352.0 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN) =  48.41
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.910
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  SCHOOL                      B       10.49      0.75      0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        1.59      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"          B       21.45      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.79
  SUBAREA AREA(ACRES) =   33.53
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.31;30M= 0.63;1H= 0.83;3H= 1.51;6H= 2.24;24H= 4.68
  S-GRAPH: VALLEY(DEV.)= 35.0%;VALLEY(UNDEV.)/DESERT= 65.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.81; LAG(HR) = 0.65; Fm(INCH/HR) = 0.59; Ybar = 0.65
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.86; 30M = 0.86; 1HR = 0.86;
  3HR = 0.98; 6HR = 0.99; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   3135.46
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20352.00 = 20097.32 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0479; Lca/L=0.4,n=.0429; Lca/L=0.5,n=.0394;Lca/L=0.6,n=.0368
  TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =     456.36
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1325.17
  TOTAL AREA(ACRES) =   3135.46       PEAK FLOW RATE(CFS) =    1325.17

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

********************************************************************************
  FLOW PROCESS FROM NODE LR020352.0 TO NODE LR020352.0 IS CODE =  11
--------------------------------------------------------------------------------
```



```
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
================================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     1325.17    Tc(MIN.) =  48.41
  AREA-AVERAGED Fm(INCH/HR) =  0.59    Ybar = 0.65
  TOTAL AREA(ACRES) =    3135.46
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20352.00 = 20097.32 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =      395.42    Tc(MIN.) =  52.52
  AREA-AVERAGED Fm(INCH/HR) =  0.56    Ybar = 0.64
  TOTAL AREA(ACRES) =     843.85
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20352.00 = 16236.90 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.62;1H= 0.82;3H= 1.49;6H= 2.20;24H= 4.63
  S-GRAPH: VALLEY(DEV.)= 40.8%;VALLEY(UNDEV.)/DESERT= 59.2%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.81; LAG(HR) = 0.65; Fm(INCH/HR) = 0.59; Ybar = 0.65
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.82; 30M = 0.82; 1HR = 0.82;
  3HR = 0.97; 6HR = 0.99; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   3979.31
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20352.00 = 20097.32 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0479; Lca/L=0.4,n=.0429; Lca/L=0.5,n=.0394;Lca/L=0.6,n=.0368
  TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =     572.02
  PEAK FLOW RATE(CFS) =    1606.86

********************************************************************************
  FLOW PROCESS FROM NODE LR020352.0 TO NODE LR020352.0 IS CODE =  12
--------------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
================================================================================

********************************************************************************
  FLOW PROCESS FROM NODE LR020352.0 TO NODE LR020353.0 IS CODE =  54
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1655.00  DOWNSTREAM(FEET) =   1625.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1454.79   CHANNEL SLOPE =  0.0206
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   6.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   1606.86
  FLOW VELOCITY(FEET/SEC.) =  25.14   FLOW DEPTH(FEET) =   3.40
  TRAVEL TIME(MIN.) =   0.96   Tc(MIN.) =  49.37
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20353.00 = 21552.11 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE LR020353.0 TO NODE LR020353.0 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN) =  49.37
```

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*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.899
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
SCHOOL                     B       20.64      0.75      0.60    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        1.09      0.75      0.60    56
RESIDENTIAL
".4 DWELLING/ACRE"         B       25.75      0.75      0.90    56
NATURAL FAIR COVER
"OPEN BRUSH"               B        2.69      0.61      1.00    66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.78
SUBAREA AREA(ACRES) =   50.17
UNIT-HYDROGRAPH DATA:
RAINFALL(INCH): 5M= 0.30;30M= 0.62;1H= 0.82;3H= 1.49;6H= 2.20;24H= 4.62
S-GRAPH: VALLEY(DEV.)= 40.8%;VALLEY(UNDEV.)/DESERT= 59.2%
         MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
Tc(HR) = 0.82; LAG(HR) = 0.66; Fm(INCH/HR) = 0.59; Ybar = 0.65
USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
DEPTH-AREA FACTORS: 5M = 0.82; 30M = 0.82; 1HR = 0.82;
3HR = 0.97; 6HR = 0.99; 24HR= 0.99
UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   4029.48
LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20353.00 = 21552.11 FEET.
 EQUIVALENT BASIN FACTOR APPROXIMATIONS:
 Lca/L=0.3,n=.0458; Lca/L=0.4,n=.0411; Lca/L=0.5,n=.0378;Lca/L=0.6,n=.0352
TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =     578.66
UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1594.27
TOTAL AREA(ACRES) =   4029.48       PEAK FLOW RATE(CFS) =    1606.86
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
FLOW PROCESS FROM NODE LR020353.0 TO NODE LR020376.0 IS CODE =  54
----------------------------------------------------------------------------
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   1625.00  DOWNSTREAM(FEET) =   1600.00
CHANNEL LENGTH THRU SUBAREA(FEET) =  1369.05   CHANNEL SLOPE =  0.0183
CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   2.000
MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   6.00
CHANNEL FLOW THRU SUBAREA(CFS) =   1606.86
FLOW VELOCITY(FEET/SEC.) =  24.05   FLOW DEPTH(FEET) =   3.51
TRAVEL TIME(MIN.) =   0.95   Tc(MIN.) =  50.32
LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20376.00 = 22921.16 FEET.

****************************************************************************
FLOW PROCESS FROM NODE LR020376.0 TO NODE LR020376.0 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN) =  50.32
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.889
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```



```
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
MOBILE HOME PARK           B       13.67      0.75      0.25    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B       19.97      0.75      0.60    56
RESIDENTIAL
".4 DWELLING/ACRE"         B        5.87      0.75      0.90    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.52
SUBAREA AREA(ACRES) =   39.51
UNIT-HYDROGRAPH DATA:
RAINFALL(INCH): 5M= 0.30;30M= 0.62;1H= 0.82;3H= 1.49;6H= 2.20;24H= 4.62
S-GRAPH: VALLEY(DEV.)= 41.2%;VALLEY(UNDEV.)/DESERT= 58.8%
         MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
Tc(HR) = 0.84; LAG(HR) = 0.67; Fm(INCH/HR) = 0.58; Ybar = 0.65
USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
DEPTH-AREA FACTORS: 5M = 0.82; 30M = 0.82; 1HR = 0.82;
3HR = 0.97; 6HR = 0.99; 24HR= 0.99
UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   4068.99
LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20376.00 = 22921.16 FEET.
 EQUIVALENT BASIN FACTOR APPROXIMATIONS:
 Lca/L=0.3,n=.0442; Lca/L=0.4,n=.0396; Lca/L=0.5,n=.0364;Lca/L=0.6,n=.0340
TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =     586.59
UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1578.64
TOTAL AREA(ACRES) =   4068.99       PEAK FLOW RATE(CFS) =    1606.86
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
FLOW PROCESS FROM NODE LR020376.0 TO NODE LR020376.0 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
PEAK FLOW RATE(CFS) =    1606.86    Tc(MIN.) =  50.32
AREA-AVERAGED Fm(INCH/HR) =  0.58   Ybar = 0.65
TOTAL AREA(ACRES) =    4068.99

****************************************************************************
FLOW PROCESS FROM NODE LR020360.0 TO NODE LR020361.0 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
INITIAL SUBAREA FLOW-LENGTH(FEET) =   985.35
ELEVATION DATA: UPSTREAM(FEET) =   2220.00  DOWNSTREAM(FEET) =   2160.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.078
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.093
SUBAREA Tc AND LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
RESIDENTIAL
"2 DWELLINGS/ACRE"         B        6.63      0.75      0.70    56   12.08
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
```

```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA RUNOFF(CFS) =      9.36
  TOTAL AREA(ACRES) =      6.63   PEAK FLOW RATE(CFS) =      9.36

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020361.0 TO NODE LR020362.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2160.00  DOWNSTREAM(FEET) =   2130.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   511.55   CHANNEL SLOPE =  0.0586
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      9.36
  FLOW VELOCITY(FEET/SEC.) =   2.19   FLOW DEPTH(FEET) =   0.29
  TRAVEL TIME(MIN.) =   3.90   Tc(MIN.) =  15.98
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20362.00 =  1496.90 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020362.0 TO NODE LR020362.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  15.98
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.769
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.52      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.40      0.75      0.60    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.20      0.61      1.00    66
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        3.04      0.75      0.40    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.70
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   12.16      SUBAREA RUNOFF(CFS) =   14.01
  EFFECTIVE AREA(ACRES) =     18.79   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     18.79       PEAK FLOW RATE(CFS) =      21.45

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020362.0 TO NODE LR020363.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2130.00  DOWNSTREAM(FEET) =   2110.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   490.89   CHANNEL SLOPE =  0.0407
```



```
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     21.45
  FLOW VELOCITY(FEET/SEC.) =   2.38   FLOW DEPTH(FEET) =   0.42
  TRAVEL TIME(MIN.) =   3.43   Tc(MIN.) =  19.41
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20363.00 =  1987.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020363.0 TO NODE LR020363.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  19.41
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.574
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.09      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.13      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    7.52      SUBAREA RUNOFF(CFS) =    7.23
  EFFECTIVE AREA(ACRES) =     26.31   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     26.31       PEAK FLOW RATE(CFS) =      25.38

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020363.0 TO NODE LR020364.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2110.00  DOWNSTREAM(FEET) =   2100.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   560.20   CHANNEL SLOPE =  0.0179
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     25.38
  FLOW VELOCITY(FEET/SEC.) =   1.81   FLOW DEPTH(FEET) =   0.53
  TRAVEL TIME(MIN.) =   5.15   Tc(MIN.) =  24.57
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20364.00 =  2547.99 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020364.0 TO NODE LR020364.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  24.57
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.367
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       10.47      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.47      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =   11.94      SUBAREA RUNOFF(CFS) =    9.16
  EFFECTIVE AREA(ACRES) =     38.25   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     38.25       PEAK FLOW RATE(CFS) =      29.63

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020364.0 TO NODE LR020365.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2100.00  DOWNSTREAM(FEET) =   2090.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   586.56   CHANNEL SLOPE =  0.0170
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     29.63
  FLOW VELOCITY(FEET/SEC.) =   1.84   FLOW DEPTH(FEET) =   0.57
  TRAVEL TIME(MIN.) =   5.31   Tc(MIN.) =  29.88
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20365.00 =  3134.55 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020365.0 TO NODE LR020365.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  29.88
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.215
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.95      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       11.94      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =   12.89      SUBAREA RUNOFF(CFS) =    8.09
  EFFECTIVE AREA(ACRES) =     51.14   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     51.14       PEAK FLOW RATE(CFS) =      32.50

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020365.0 TO NODE LR020366.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
```



```
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2090.00  DOWNSTREAM(FEET) =   2055.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   592.61   CHANNEL SLOPE =  0.0591
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     32.50
  FLOW VELOCITY(FEET/SEC.) =   3.04   FLOW DEPTH(FEET) =   0.46
  TRAVEL TIME(MIN.) =   3.25   Tc(MIN.) =  33.13
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20366.00 =  3727.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020366.0 TO NODE LR020366.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  33.13
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.142
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.40      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        7.97      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =    8.37      SUBAREA RUNOFF(CFS) =    4.69
  EFFECTIVE AREA(ACRES) =     59.51   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     59.51       PEAK FLOW RATE(CFS) =      33.83

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020366.0 TO NODE LR020367.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2055.00  DOWNSTREAM(FEET) =   2040.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   831.01   CHANNEL SLOPE =  0.0181
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     33.83
  FLOW VELOCITY(FEET/SEC.) =   1.94   FLOW DEPTH(FEET) =   0.59
  TRAVEL TIME(MIN.) =   7.13   Tc(MIN.) =  40.26
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20367.00 =  4558.17 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020367.0 TO NODE LR020367.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  40.26
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.016
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

```
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       40.07      0.75       0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.44      0.75       0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =   44.51      SUBAREA RUNOFF(CFS) =   20.04
  EFFECTIVE AREA(ACRES) =    104.02   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =    104.02       PEAK FLOW RATE(CFS) =      47.11

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020367.0 TO NODE LR020368.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2040.00  DOWNSTREAM(FEET) =   1970.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   949.68   CHANNEL SLOPE =  0.0737
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     47.11
  FLOW VELOCITY(FEET/SEC.) =   3.65   FLOW DEPTH(FEET) =   0.51
  TRAVEL TIME(MIN.) =   4.34   Tc(MIN.) =  44.60
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20368.00 =  5507.85 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020368.0 TO NODE LR020368.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  44.60
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.956
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       15.48      0.75       0.70    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.21      0.75       0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   15.69      SUBAREA RUNOFF(CFS) =    6.07
  EFFECTIVE AREA(ACRES) =    119.71   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =    119.71       PEAK FLOW RATE(CFS) =      47.52

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020368.0 TO NODE LR020369.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```



```
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1970.00  DOWNSTREAM(FEET) =   1900.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   892.15   CHANNEL SLOPE =  0.0785
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     47.52
  FLOW VELOCITY(FEET/SEC.) =   3.71   FLOW DEPTH(FEET) =   0.51
  TRAVEL TIME(MIN.) =   4.01   Tc(MIN.) =  48.62
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20369.00 =  6400.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020369.0 TO NODE LR020369.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  48.62
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.908
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       29.59      0.75       0.70    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.11      0.75       0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   29.70      SUBAREA RUNOFF(CFS) =   10.25
  EFFECTIVE AREA(ACRES) =    149.41   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =    149.41       PEAK FLOW RATE(CFS) =      52.58

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
  FLOW PROCESS FROM NODE LR020369.0 TO NODE LR020370.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1900.00  DOWNSTREAM(FEET) =   1860.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   949.40   CHANNEL SLOPE =  0.0421
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     52.58
  FLOW VELOCITY(FEET/SEC.) =   3.00   FLOW DEPTH(FEET) =   0.59
  TRAVEL TIME(MIN.) =   5.28   Tc(MIN.) =  53.89
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20370.00 =  7349.40 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020370.0 TO NODE LR020370.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  53.89
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.853
  SUBAREA LOSS RATE DATA(AMC  II):
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```
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
".4 DWELLING/ACRE"         B        9.75      0.75      0.90    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        0.37      0.75      0.60    56
RESIDENTIAL
"2 DWELLINGS/ACRE"         B        7.31      0.75      0.70    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.81
SUBAREA AREA(ACRES) =   17.43      SUBAREA RUNOFF(CFS) =    3.88
EFFECTIVE AREA(ACRES) =    166.84   AREA-AVERAGED Fm(INCH/HR) =  0.53
AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.71
TOTAL AREA(ACRES) =    166.84       PEAK FLOW RATE(CFS) =      52.58
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

****************************************************************************
FLOW PROCESS FROM NODE LR020370.0 TO NODE LR020371.0 IS CODE =  63
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 1860.00  DOWNSTREAM ELEVATION(FEET) = 1845.00
STREET LENGTH(FEET) =   771.36   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      53.39
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.59
  HALFSTREET FLOOD WIDTH(FEET) =   22.65
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.86
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.88
STREET FLOW TRAVEL TIME(MIN.) =   2.65   Tc(MIN.) =  56.54
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.829
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        1.23      0.75      0.60    56
RESIDENTIAL
".4 DWELLING/ACRE"         B        0.24      0.75      0.90    56
RESIDENTIAL
"2 DWELLINGS/ACRE"         B        4.18      0.75      0.70    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
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SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
SUBAREA AREA(ACRES) =    5.65      SUBAREA RUNOFF(CFS) =    1.60
EFFECTIVE AREA(ACRES) =    172.49    AREA-AVERAGED Fm(INCH/HR) =  0.53
AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.71
TOTAL AREA(ACRES) =    172.49        PEAK FLOW RATE(CFS) =      52.58
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.59   HALFSTREET FLOOD WIDTH(FEET) =  22.53
FLOW VELOCITY(FEET/SEC.) =  4.83   DEPTH*VELOCITY(FT*FT/SEC.) =   2.85
LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20371.00 =  8120.76 FEET.

****************************************************************************
FLOW PROCESS FROM NODE LR020371.0 TO NODE LR020372.0 IS CODE =  63
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 1845.00  DOWNSTREAM ELEVATION(FEET) = 1825.00
STREET LENGTH(FEET) =   580.50   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.77

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      57.82
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.56
  HALFSTREET FLOOD WIDTH(FEET) =   21.01
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.05
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.39
STREET FLOW TRAVEL TIME(MIN.) =   1.60   Tc(MIN.) =  58.14
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.815
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        3.05      0.75      0.60    56
RESIDENTIAL
"2 DWELLINGS/ACRE"         B       36.06      0.75      0.70    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
SUBAREA AREA(ACRES) =   39.11      SUBAREA RUNOFF(CFS) =   10.47
EFFECTIVE AREA(ACRES) =    211.60    AREA-AVERAGED Fm(INCH/HR) =  0.52
AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.70
TOTAL AREA(ACRES) =    211.60        PEAK FLOW RATE(CFS) =      55.45
```

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  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.55   HALFSTREET FLOOD WIDTH(FEET) =  20.70
  FLOW VELOCITY(FEET/SEC.) =  5.96   DEPTH*VELOCITY(FT*FT/SEC.) =   3.30
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  580.5 FT WITH ELEVATION-DROP =  20.0 FT, IS   62.8 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20372.00
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20372.00 =  8701.26 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020372.0 TO NODE LR020373.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1825.00  DOWNSTREAM ELEVATION(FEET) = 1770.00
  STREET LENGTH(FEET) =  1298.78   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.77

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      61.52
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.59
    HALFSTREET FLOOD WIDTH(FEET) =   21.81
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.22
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.70
  STREET FLOW TRAVEL TIME(MIN.) =   3.48   Tc(MIN.) =  61.62
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.787
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        6.56      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       75.29      0.75      0.90    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        9.91      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.86
  SUBAREA AREA(ACRES) =   91.76      SUBAREA RUNOFF(CFS) =   12.08
  EFFECTIVE AREA(ACRES) =    303.36    AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.75
  TOTAL AREA(ACRES) =    303.36        PEAK FLOW RATE(CFS) =      62.21

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43
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  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.60   HALFSTREET FLOOD WIDTH(FEET) =  21.93
  FLOW VELOCITY(FEET/SEC.) =  6.22   DEPTH*VELOCITY(FT*FT/SEC.) =   3.71
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1298.8 FT WITH ELEVATION-DROP =  55.0 FT, IS  107.7 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20373.00
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20373.00 = 10000.04 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020373.0 TO NODE LR020374.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1770.00  DOWNSTREAM ELEVATION(FEET) = 1720.00
  STREET LENGTH(FEET) =  1333.48   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.79

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      66.04
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.62
    HALFSTREET FLOOD WIDTH(FEET) =   22.98
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.03
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.73
  STREET FLOW TRAVEL TIME(MIN.) =   3.68   Tc(MIN.) =  65.30
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.760
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        6.64      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       73.46      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.88
  SUBAREA AREA(ACRES) =   80.10      SUBAREA RUNOFF(CFS) =    7.62
  EFFECTIVE AREA(ACRES) =    383.46    AREA-AVERAGED Fm(INCH/HR) =  0.58
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.78
  TOTAL AREA(ACRES) =    383.46        PEAK FLOW RATE(CFS) =      62.48

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.61   HALFSTREET FLOOD WIDTH(FEET) =  22.51
  FLOW VELOCITY(FEET/SEC.) =  5.94   DEPTH*VELOCITY(FT*FT/SEC.) =   3.62
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1333.5 FT WITH ELEVATION-DROP =  50.0 FT, IS   90.2 CFS,
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        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20374.00
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20374.00 = 11333.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020374.0 TO NODE LR020375.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1720.00  DOWNSTREAM ELEVATION(FEET) = 1660.00
  STREET LENGTH(FEET) =  1282.17   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.75

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      65.92
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.60
    HALFSTREET FLOOD WIDTH(FEET) =   21.99
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.56
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.92
  STREET FLOW TRAVEL TIME(MIN.) =   3.26   Tc(MIN.) =  68.56
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.738
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        8.27      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       70.54      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.87
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =   78.81      SUBAREA RUNOFF(CFS) =    6.89
  EFFECTIVE AREA(ACRES) =    462.27    AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.79
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =    462.27        PEAK FLOW RATE(CFS) =      63.94

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.59   HALFSTREET FLOOD WIDTH(FEET) =  21.75
  FLOW VELOCITY(FEET/SEC.) =  6.50   DEPTH*VELOCITY(FT*FT/SEC.) =   3.85
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20375.00 = 12615.69 FEET.

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  FLOW PROCESS FROM NODE LR020375.0 TO NODE LR020376.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1660.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1600.00
  FLOW LENGTH(FEET) =  1887.14   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  15.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.60
  PIPE-FLOW(CFS) =     63.94
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   2.01    Tc(MIN.) =  70.57
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.726
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       17.76      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       79.51      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.85
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =   97.27      SUBAREA RUNOFF(CFS) =    9.83
  EFFECTIVE AREA(ACRES) =    559.54    AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.80
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =    559.54        PEAK FLOW RATE(CFS) =     72.68

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.43; 6HR = 2.06; 24HR = 4.43

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 26.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.80
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =    8.74
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.36
    HALFSTREET FLOOD WIDTH(FEET) =   10.26
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.52
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.28
  LONGEST FLOWPATH FROM NODE  20360.00 TO NODE  20376.00 = 14502.83 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020376.0 TO NODE LR020376.0 IS CODE =   1
```

```
------------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  70.57
  RAINFALL INTENSITY(INCH/HR) =   0.73
  AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.80
  EFFECTIVE STREAM AREA(ACRES) =   559.54
  TOTAL STREAM AREA(ACRES) =   559.54
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     72.68
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1      1606.86   50.32     4068.99  LR020120.0
     2        72.68   70.57      559.54  LR020360.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.62;1H= 0.82;3H= 1.48;6H= 2.18;24H= 4.60
  S-GRAPH: VALLEY(DEV.)= 41.6%;VALLEY(UNDEV.)/DESERT= 58.4%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.84; LAG(HR) = 0.67; Fm(INCH/HR) = 0.59; Ybar = 0.65
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.80; 30M = 0.80; 1HR = 0.80;
  3HR = 0.97; 6HR = 0.98; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   4628.53
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20376.00 = 22921.16 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0442; Lca/L=0.4,n=.0396; Lca/L=0.5,n=.0364;Lca/L=0.6,n=.0340
  TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =     655.09
  PEAK FLOW RATE(CFS) =   1726.92

****************************************************************************
  FLOW PROCESS FROM NODE LR020376.0 TO NODE LR020376.0 IS CODE = 152
------------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20376.dna
==============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =   4628.53  TC(MIN.) =     50.32
  AREA-AVERAGED Fm(INCH/HR)=  0.59   Ybar =  0.65
  PEAK FLOW RATE(CFS)   =   1726.92
==============================================================================
==============================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
         (c) Copyright 1983-2002 Advanced Engineering Software (aes)
             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                          San Bernardino County
                    Transportation/ Flood Control Department

                          Water Resources Division

  ************************ DESCRIPTION OF STUDY *************************
 * LR0204ZZ                                                             *
 * 10-Year Storm                                                        *
 *                                                                      *
  ************************************************************************

   FILE NAME: LR0204ZZ.Z10
   TIME/DATE OF STUDY: 09:58 02/22/2006
 ========================================================================
   USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
 ========================================================================
                     --*TIME-OF-CONCENTRATION MODEL*--

   USER SPECIFIED STORM EVENT(YEAR) =   10.00
   SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
   SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
   *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

   SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
   USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 0.8000

   *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

   *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
      HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
      WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
 NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
 ===  =====  =========  =================  ======  ===== ====== ===== =======
   1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
   2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
   3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
   4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
   5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
   6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
   7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
   8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
   9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
```



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  17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180

   GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
     1. Relative Flow-Depth =  0.20 FEET
        as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
     2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
    *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
     OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
    *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

   UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
     WATERSHED LAG = 0.80 * Tc
     USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
     1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
     FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
     PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
     SIERRA MADRE DEPTH-AREA FACTORS USED.
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


 ************************************************************************
   FLOW PROCESS FROM NODE LR020400.0 TO NODE LR020401.0 IS CODE =  21
 ------------------------------------------------------------------------
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
 ========================================================================
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   924.07
   ELEVATION DATA: UPSTREAM(FEET) =   1720.00  DOWNSTREAM(FEET) =   1670.00

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.338
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.174
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
   RESIDENTIAL
   ".4 DWELLING/ACRE"         B        0.14      0.75      0.90    56   13.40
   RESIDENTIAL
   "3-4 DWELLINGS/ACRE"       B       10.27      0.75      0.60    56   11.34
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
   SUBAREA RUNOFF(CFS) =     16.14
   TOTAL AREA(ACRES) =     10.41   PEAK FLOW RATE(CFS) =     16.14

   SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
   5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88

 ************************************************************************
   FLOW PROCESS FROM NODE LR020401.0 TO NODE LR020402.0 IS CODE =  63
 ------------------------------------------------------------------------
   >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
 ========================================================================
   UPSTREAM ELEVATION(FEET) = 1670.00  DOWNSTREAM ELEVATION(FEET) = 1657.00
   STREET LENGTH(FEET) =   293.15   CURB HEIGHT(INCHES) =  6.0
   STREET HALFWIDTH(FEET) = 18.00
```

```
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.72

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      22.35
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.42
    HALFSTREET FLOOD WIDTH(FEET) =   14.68
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.92
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.06
  STREET FLOW TRAVEL TIME(MIN.) =   0.99   Tc(MIN.) =  12.33
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.067
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.06      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        8.48      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    8.54      SUBAREA RUNOFF(CFS) =   12.43
  EFFECTIVE AREA(ACRES) =     18.95    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     18.95        PEAK FLOW RATE(CFS) =      27.56

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.44   HALFSTREET FLOOD WIDTH(FEET) =  15.93
  FLOW VELOCITY(FEET/SEC.) =  5.19   DEPTH*VELOCITY(FT*FT/SEC.) =   2.31
  LONGEST FLOWPATH FROM NODE  20400.00 TO NODE  20402.00 =  1217.22 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020402.0 TO NODE LR020403.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1657.00  DOWNSTREAM ELEVATION(FEET) = 1655.00
  STREET LENGTH(FEET) =   198.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
```



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  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      29.45
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.55
    HALFSTREET FLOOD WIDTH(FEET) =   20.58
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.20
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.77
  STREET FLOW TRAVEL TIME(MIN.) =   1.03   Tc(MIN.) =  13.37
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.970
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.76      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    2.76      SUBAREA RUNOFF(CFS) =    3.78
  EFFECTIVE AREA(ACRES) =     21.71    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     21.71        PEAK FLOW RATE(CFS) =      29.68

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.55   HALFSTREET FLOOD WIDTH(FEET) =  20.64
  FLOW VELOCITY(FEET/SEC.) =  3.21   DEPTH*VELOCITY(FT*FT/SEC.) =   1.77
  LONGEST FLOWPATH FROM NODE  20400.00 TO NODE  20403.00 =  1415.72 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020403.0 TO NODE LR020404.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1655.00  DOWNSTREAM ELEVATION(FEET) = 1645.00
  STREET LENGTH(FEET) =   470.13   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.89

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      34.91
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.52
    HALFSTREET FLOOD WIDTH(FEET) =   19.11
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.34
```

```
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.27
 STREET FLOW TRAVEL TIME(MIN.) =   1.80   Tc(MIN.) =  15.17
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.826
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        8.38      0.75      0.60    56
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        0.08      0.75      0.90    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =    8.46      SUBAREA RUNOFF(CFS) =   10.47
 EFFECTIVE AREA(ACRES) =     30.17    AREA-AVERAGED Fm(INCH/HR) =  0.45
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =     30.17        PEAK FLOW RATE(CFS) =      37.33

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.53   HALFSTREET FLOOD WIDTH(FEET) =  19.60
 FLOW VELOCITY(FEET/SEC.) =  4.44   DEPTH*VELOCITY(FT*FT/SEC.) =   2.36
 LONGEST FLOWPATH FROM NODE  20400.00 TO NODE  20404.00 =  1885.85 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020404.0 TO NODE LR020405.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1645.00  DOWNSTREAM ELEVATION(FEET) = 1635.00
 STREET LENGTH(FEET) =   344.26   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.81

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      43.09
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.53
   HALFSTREET FLOOD WIDTH(FEET) =   19.54
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.15
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.73
 STREET FLOW TRAVEL TIME(MIN.) =   1.11   Tc(MIN.) =  16.28
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.750
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
```



```
 "3-4 DWELLINGS/ACRE"       B        9.77      0.75      0.60    56
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        0.09      0.75      0.90    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =    9.86      SUBAREA RUNOFF(CFS) =   11.53
 EFFECTIVE AREA(ACRES) =     40.03    AREA-AVERAGED Fm(INCH/HR) =  0.45
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =     40.03        PEAK FLOW RATE(CFS) =      46.79

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.54   HALFSTREET FLOOD WIDTH(FEET) =  20.09
 FLOW VELOCITY(FEET/SEC.) =  5.32   DEPTH*VELOCITY(FT*FT/SEC.) =   2.88
 LONGEST FLOWPATH FROM NODE  20400.00 TO NODE  20405.00 =  2230.11 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020405.0 TO NODE LR020406.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1635.00  DOWNSTREAM ELEVATION(FEET) = 1620.00
 STREET LENGTH(FEET) =   701.02   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.91

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      57.22
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.64
   HALFSTREET FLOOD WIDTH(FEET) =   24.27
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.71
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.03
 STREET FLOW TRAVEL TIME(MIN.) =   2.48   Tc(MIN.) =  18.77
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.607
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       20.00      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =   20.00      SUBAREA RUNOFF(CFS) =   20.84
 EFFECTIVE AREA(ACRES) =     60.03    AREA-AVERAGED Fm(INCH/HR) =  0.45
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =     60.03        PEAK FLOW RATE(CFS) =      62.49
```

```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.66   HALFSTREET FLOOD WIDTH(FEET) =  25.09
  FLOW VELOCITY(FEET/SEC.) =  4.82   DEPTH*VELOCITY(FT*FT/SEC.) =   3.18
  LONGEST FLOWPATH FROM NODE  20400.00 TO NODE  20406.00 =  2931.13 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020406.0 TO NODE LR020407.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1620.00  DOWNSTREAM ELEVATION(FEET) = 1612.00
  STREET LENGTH(FEET) =   570.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.02

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      65.00
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.70
    HALFSTREET FLOOD WIDTH(FEET) =   27.89
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.24
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.99
  STREET FLOW TRAVEL TIME(MIN.) =   2.24   Tc(MIN.) =  21.01
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.502
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.31      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    5.31      SUBAREA RUNOFF(CFS) =    5.03
  EFFECTIVE AREA(ACRES) =     65.34    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     65.34        PEAK FLOW RATE(CFS) =      62.49
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.70   HALFSTREET FLOOD WIDTH(FEET) =  27.59
  FLOW VELOCITY(FEET/SEC.) =  4.17   DEPTH*VELOCITY(FT*FT/SEC.) =   2.91
  LONGEST FLOWPATH FROM NODE  20400.00 TO NODE  20407.00 =  3501.13 FEET.
```



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****************************************************************************
  FLOW PROCESS FROM NODE LR020407.0 TO NODE LR020408.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1612.00  DOWNSTREAM ELEVATION(FEET) = 1590.00
  STREET LENGTH(FEET) =   804.76   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.85

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      72.36
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.66
    HALFSTREET FLOOD WIDTH(FEET) =   25.33
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.48
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.64
  STREET FLOW TRAVEL TIME(MIN.) =   2.45   Tc(MIN.) =  23.46
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.406
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       22.89      0.75      0.60    56
  COMMERCIAL                 B        0.02      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   22.91      SUBAREA RUNOFF(CFS) =   19.73
  EFFECTIVE AREA(ACRES) =     88.25    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     88.25        PEAK FLOW RATE(CFS) =      75.92

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.67   HALFSTREET FLOOD WIDTH(FEET) =  26.17
  FLOW VELOCITY(FEET/SEC.) =  5.55   DEPTH*VELOCITY(FT*FT/SEC.) =   3.74
  LONGEST FLOWPATH FROM NODE  20400.00 TO NODE  20408.00 =  4305.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020408.0 TO NODE LR020409.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1590.00  DOWNSTREAM ELEVATION(FEET) = 1570.00
  STREET LENGTH(FEET) =   498.42   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00
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 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.78

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      99.60
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.69
   HALFSTREET FLOOD WIDTH(FEET) =   27.10
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.89
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.74
 STREET FLOW TRAVEL TIME(MIN.) =   1.21   Tc(MIN.) =  24.66
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.364
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       51.42      0.75      0.60    56
 COMMERCIAL                 B        4.09      0.75      0.10    56
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        0.43      0.75      0.90    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.57
 SUBAREA AREA(ACRES) =   55.94      SUBAREA RUNOFF(CFS) =   47.36
 EFFECTIVE AREA(ACRES) =    144.19    AREA-AVERAGED Fm(INCH/HR) =  0.44
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.59
 TOTAL AREA(ACRES) =    144.19        PEAK FLOW RATE(CFS) =     119.97

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.72   HALFSTREET FLOOD WIDTH(FEET) =  28.69
 FLOW VELOCITY(FEET/SEC.) =  7.39   DEPTH*VELOCITY(FT*FT/SEC.) =   5.32
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  498.4 FT WITH ELEVATION-DROP =  20.0 FT, IS  125.7 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20409.00
 LONGEST FLOWPATH FROM NODE  20400.00 TO NODE  20409.00 =  4804.31 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020409.0 TO NODE LR020410.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1570.00  DOWNSTREAM ELEVATION(FEET) = 1533.00
 STREET LENGTH(FEET) =  1374.92   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
```



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 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.86

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     139.20
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.79
   HALFSTREET FLOOD WIDTH(FEET) =   32.23
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.78
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.36
 STREET FLOW TRAVEL TIME(MIN.) =   3.38   Tc(MIN.) =  28.04
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.263
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.01      0.61      1.00    66
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       52.45      0.75      0.60    56
 PUBLIC PARK                B        0.03      0.75      0.85    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =   52.49      SUBAREA RUNOFF(CFS) =   38.44
 EFFECTIVE AREA(ACRES) =    196.68    AREA-AVERAGED Fm(INCH/HR) =  0.44
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.59
 TOTAL AREA(ACRES) =    196.68        PEAK FLOW RATE(CFS) =     145.27

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.80   HALFSTREET FLOOD WIDTH(FEET) =  32.65
 FLOW VELOCITY(FEET/SEC.) =  6.88   DEPTH*VELOCITY(FT*FT/SEC.) =   5.51
 LONGEST FLOWPATH FROM NODE  20400.00 TO NODE  20410.00 =  6179.23 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020410.0 TO NODE LR020410.0 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE LR020376.0 TO NODE LR020376.0 IS CODE = 15.1
----------------------------------------------------------------------------
 >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
 PEAK FLOWRATE TABLE FILE NAME: 20376.DNA
 MEMORY BANK #  2 DEFINED AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     1726.92    Tc(MIN.) =  50.32
 AREA-AVERAGED Fm(INCH/HR) =  0.59    Ybar = 0.65
 TOTAL AREA(ACRES) =    4628.53
 LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20376.00 = 22921.16 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR020376.0 TO NODE LR020376.0 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1726.92    Tc(MIN.) =  50.32
  AREA-AVERAGED Fm(INCH/HR) =  0.59    Ybar = 0.65
  TOTAL AREA(ACRES) =    4628.53
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20376.00 = 22921.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020376.0 TO NODE LR020376.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020376.0 TO NODE LR020410.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1600.00  DOWNSTREAM(FEET) =   1533.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2846.26   CHANNEL SLOPE =  0.0235
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   6.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   1726.92
  FLOW VELOCITY(FEET/SEC.) =  26.94   FLOW DEPTH(FEET) =   3.41
  TRAVEL TIME(MIN.) =   1.76   Tc(MIN.) =  52.08
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20410.00 = 25767.42 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020410.0 TO NODE LR020410.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  52.08
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.871
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       25.52      0.75      0.60    56
  PUBLIC PARK                B        5.30      0.75      0.85    56
  SCHOOL                     B        8.19      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
  SUBAREA AREA(ACRES) =   39.01
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.62;1H= 0.82;3H= 1.48;6H= 2.18;24H= 4.59
  S-GRAPH: VALLEY(DEV.)= 42.1%;VALLEY(UNDEV.)/DESERT= 57.9%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.87; LAG(HR) = 0.69; Fm(INCH/HR) = 0.58; Ybar = 0.65
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.80; 30M = 0.80; 1HR = 0.80;
  3HR = 0.97; 6HR = 0.98; 24HR= 0.99
```



```
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   4667.54
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20410.00 = 25767.42 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0413; Lca/L=0.4,n=.0370; Lca/L=0.5,n=.0340;Lca/L=0.6,n=.0317
  TIME OF PEAK FLOW(HR) = 16.75  RUNOFF VOLUME(AF) =     660.69
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1714.11
  TOTAL AREA(ACRES) =   4667.54       PEAK FLOW RATE(CFS) =    1726.92
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88

****************************************************************************
  FLOW PROCESS FROM NODE LR020410.0 TO NODE LR020410.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     1726.92    Tc(MIN.) =  52.08
  AREA-AVERAGED Fm(INCH/HR) =  0.58    Ybar = 0.65
  TOTAL AREA(ACRES) =    4667.54
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20410.00 = 25767.42 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    145.27  28.04    1.263  0.75( 0.44) 0.59   196.7 LR020400.0
  LONGEST FLOWPATH FROM NODE  20400.00 TO NODE  20410.00 =  6179.23 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.62;1H= 0.82;3H= 1.48;6H= 2.17;24H= 4.56
  S-GRAPH: VALLEY(DEV.)= 44.4%;VALLEY(UNDEV.)/DESERT= 55.6%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.87; LAG(HR) = 0.69; Fm(INCH/HR) = 0.58; Ybar = 0.65
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.79; 30M = 0.79; 1HR = 0.79;
  3HR = 0.97; 6HR = 0.98; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   4864.22
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20410.00 = 25767.42 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0413; Lca/L=0.4,n=.0370; Lca/L=0.5,n=.0340;Lca/L=0.6,n=.0317
  TIME OF PEAK FLOW(HR) = 16.75  RUNOFF VOLUME(AF) =     691.23
  PEAK FLOW RATE(CFS) =    1791.12

****************************************************************************
  FLOW PROCESS FROM NODE LR020410.0 TO NODE LR020410.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020410.0 TO NODE LR020452.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
```

```
  ELEVATION DATA: UPSTREAM(FEET) =   1533.00  DOWNSTREAM(FEET) =   1510.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1329.02   CHANNEL SLOPE =  0.0173
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   6.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   1791.12
  FLOW VELOCITY(FEET/SEC.) =  24.35   FLOW DEPTH(FEET) =   3.77
  TRAVEL TIME(MIN.) =   0.91   Tc(MIN.) =  52.99
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20452.00 = 27096.44 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020452.0 TO NODE LR020452.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  52.99
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.862
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       25.77      0.75      0.60    56
  PUBLIC PARK                B        1.54      0.75      0.85    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.79      0.61      1.00    66
  COMMERCIAL                 B        0.05      0.75      0.10    56
  MOBILE HOME PARK           B        5.02      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.57
  SUBAREA AREA(ACRES) =   33.17
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.62;1H= 0.82;3H= 1.48;6H= 2.17;24H= 4.56
  S-GRAPH: VALLEY(DEV.)= 44.8%;VALLEY(UNDEV.)/DESERT= 55.2%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.88; LAG(HR) = 0.71; Fm(INCH/HR) = 0.58; Ybar = 0.65
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.79; 30M = 0.79; 1HR = 0.79;
  3HR = 0.97; 6HR = 0.98; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   4897.39
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20452.00 = 27096.44 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0401; Lca/L=0.4,n=.0360; Lca/L=0.5,n=.0331;Lca/L=0.6,n=.0308
  TIME OF PEAK FLOW(HR) = 16.75  RUNOFF VOLUME(AF) =     696.63
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1797.20
  TOTAL AREA(ACRES) =   4897.39       PEAK FLOW RATE(CFS) =    1797.20

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88

****************************************************************************
  FLOW PROCESS FROM NODE LR020452.0 TO NODE LR020452.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020420.0 TO NODE LR020421.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
```



```
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   575.26
  ELEVATION DATA: UPSTREAM(FEET) =   1740.00  DOWNSTREAM(FEET) =   1735.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.027
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.211
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.69      0.98      0.60    32   13.52
  MOBILE HOME PARK           A        4.22      0.98      0.25    32   11.03
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.30
  SUBAREA RUNOFF(CFS) =      8.48
  TOTAL AREA(ACRES) =      4.91   PEAK FLOW RATE(CFS) =      8.48

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88

****************************************************************************
  FLOW PROCESS FROM NODE LR020421.0 TO NODE LR020422.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1735.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1725.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   643.67
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.945
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A        2.50      0.98      0.25    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.99      0.98      0.60    32
  COMMERCIAL                 A        2.87      0.98      0.10    32
  COMMERCIAL                 B        1.82      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.05      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.87
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.29
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     16.28
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.10
  AVERAGE FLOW DEPTH(FEET) =   0.56   FLOOD WIDTH(FEET) =   28.02
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   2.62   Tc(MIN.) =  13.65
  SUBAREA AREA(ACRES) =   10.23       SUBAREA RUNOFF(CFS) =   15.64
  EFFECTIVE AREA(ACRES) =   15.14     AREA-AVERAGED Fm(INCH/HR) =   0.26
  AREA-AVERAGED Fp(INCH/HR) =   0.90  AREA-AVERAGED Ap =   0.29
  TOTAL AREA(ACRES) =     15.14         PEAK FLOW RATE(CFS) =      22.95

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88
```

```
  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.61   FLOOD WIDTH(FEET) =   33.39
  FLOW VELOCITY(FEET/SEC.) =   4.27   DEPTH*VELOCITY(FT*FT/SEC) =   2.60
  LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20422.00 =  1218.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020422.0 TO NODE LR020423.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1725.00  DOWNSTREAM ELEVATION(FEET) = 1712.00
  STREET LENGTH(FEET) =   299.17   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.80

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      28.57
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.48
    HALFSTREET FLOOD WIDTH(FEET) =   16.02
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.18
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.48
  STREET FLOW TRAVEL TIME(MIN.) =   0.96   Tc(MIN.) =  14.61
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.867
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A        2.62      0.98      0.25    32
  SCHOOL                     A        0.15      0.98      0.60    32
  COMMERCIAL                 A        1.21      0.98      0.10    32
  COMMERCIAL                 B        2.01      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.63      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.84
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.27
  SUBAREA AREA(ACRES) =    7.62      SUBAREA RUNOFF(CFS) =   11.25
  EFFECTIVE AREA(ACRES) =     22.76    AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.88  AREA-AVERAGED Ap =  0.28
  TOTAL AREA(ACRES) =     22.76        PEAK FLOW RATE(CFS) =      33.14

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.50   HALFSTREET FLOOD WIDTH(FEET) =  16.96
  FLOW VELOCITY(FEET/SEC.) =  5.40   DEPTH*VELOCITY(FT*FT/SEC.) =   2.69
  LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20423.00 =  1518.10 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR020423.0 TO NODE LR020424.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1712.00  DOWNSTREAM ELEVATION(FEET) = 1703.00
  STREET LENGTH(FEET) =   258.55   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      36.96
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.53
    HALFSTREET FLOOD WIDTH(FEET) =   18.52
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.10
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.70
  STREET FLOW TRAVEL TIME(MIN.) =   0.84   Tc(MIN.) =  15.45
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.805
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A        0.47      0.98      0.25    32
  MOBILE HOME PARK           B        0.58      0.75      0.25    56
  COMMERCIAL                 B        2.83      0.75      0.10    56
  COMMERCIAL                 A        0.03      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.39      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.77
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.26
  SUBAREA AREA(ACRES) =    5.30      SUBAREA RUNOFF(CFS) =    7.66
  EFFECTIVE AREA(ACRES) =     28.06    AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  0.28
  TOTAL AREA(ACRES) =     28.06        PEAK FLOW RATE(CFS) =      39.52

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.54   HALFSTREET FLOOD WIDTH(FEET) =  19.07
  FLOW VELOCITY(FEET/SEC.) =  5.16   DEPTH*VELOCITY(FT*FT/SEC.) =   2.79
  LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20424.00 =  1776.65 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020424.0 TO NODE LR020425.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
```

```
  UPSTREAM ELEVATION(FEET) = 1703.00  DOWNSTREAM ELEVATION(FEET) = 1696.00
  STREET LENGTH(FEET) =   197.56   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      41.77
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.55
    HALFSTREET FLOOD WIDTH(FEET) =   19.38
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.29
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.89
  STREET FLOW TRAVEL TIME(MIN.) =   0.62   Tc(MIN.) =  16.07
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.763
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B        0.06      0.75      0.25    56
  COMMERCIAL                 B        1.63      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.63      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.35
  SUBAREA AREA(ACRES) =    3.32      SUBAREA RUNOFF(CFS) =    4.49
  EFFECTIVE AREA(ACRES) =     31.38    AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.85  AREA-AVERAGED Ap =  0.29
  TOTAL AREA(ACRES) =     31.38        PEAK FLOW RATE(CFS) =      42.95

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.55   HALFSTREET FLOOD WIDTH(FEET) =  19.62
  FLOW VELOCITY(FEET/SEC.) =  5.32   DEPTH*VELOCITY(FT*FT/SEC.) =   2.93
  LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20425.00 =  1974.21 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020425.0 TO NODE LR020426.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1696.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1685.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   834.27
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.587
  SUBAREA LOSS RATE DATA(AMC  II):
```



```
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.17      0.75      0.60    56
  MOBILE HOME PARK           B        0.01      0.75      0.25    56
  COMMERCIAL                 B        0.54      0.75      0.10    56
  COMMERCIAL                 A        3.24      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        4.60      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.93
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     48.16
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.51
  AVERAGE FLOW DEPTH(FEET) =   0.74   FLOOD WIDTH(FEET) =   48.63
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   3.09   Tc(MIN.) =  19.16
  SUBAREA AREA(ACRES) =    9.56       SUBAREA RUNOFF(CFS) =   10.44
  EFFECTIVE AREA(ACRES) =   40.94     AREA-AVERAGED Fm(INCH/HR) =   0.27
  AREA-AVERAGED Fp(INCH/HR) =   0.87  AREA-AVERAGED Ap =   0.31
  TOTAL AREA(ACRES) =     40.94         PEAK FLOW RATE(CFS) =      48.40

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.74   FLOOD WIDTH(FEET) =   48.78
  FLOW VELOCITY(FEET/SEC.) =   4.50   DEPTH*VELOCITY(FT*FT/SEC) =   3.33
  LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20426.00 =  2808.48 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020426.0 TO NODE LR020427.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1685.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1676.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   311.63
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.547
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 A        1.60      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        6.06      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.60      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.96
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     52.37
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.30
  AVERAGE FLOW DEPTH(FEET) =   0.69   FLOOD WIDTH(FEET) =   42.50
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.82   Tc(MIN.) =  19.98
  SUBAREA AREA(ACRES) =    8.26       SUBAREA RUNOFF(CFS) =    7.93
  EFFECTIVE AREA(ACRES) =   49.20     AREA-AVERAGED Fm(INCH/HR) =   0.31
  AREA-AVERAGED Fp(INCH/HR) =   0.89  AREA-AVERAGED Ap =   0.34
```

```
  TOTAL AREA(ACRES) =     49.20         PEAK FLOW RATE(CFS) =      54.87

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.69   FLOOD WIDTH(FEET) =   43.40
  FLOW VELOCITY(FEET/SEC.) =   6.35   DEPTH*VELOCITY(FT*FT/SEC) =   4.40
  LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20427.00 =  3120.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020427.0 TO NODE LR020428.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1676.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1668.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   300.94
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.511
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        5.53      0.98      0.60    32
  COMMERCIAL                 A        0.78      0.98      0.10    32
  MOBILE HOME PARK           A        2.12      0.98      0.25    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.52      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.96
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.47
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     59.13
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.23
  AVERAGE FLOW DEPTH(FEET) =   0.71   FLOOD WIDTH(FEET) =   45.64
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.80   Tc(MIN.) =  20.79
  SUBAREA AREA(ACRES) =    8.95       SUBAREA RUNOFF(CFS) =    8.52
  EFFECTIVE AREA(ACRES) =   58.15     AREA-AVERAGED Fm(INCH/HR) =   0.33
  AREA-AVERAGED Fp(INCH/HR) =   0.91  AREA-AVERAGED Ap =   0.36
  TOTAL AREA(ACRES) =     58.15         PEAK FLOW RATE(CFS) =      61.79

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.72   FLOOD WIDTH(FEET) =   46.54
  FLOW VELOCITY(FEET/SEC.) =   6.28   DEPTH*VELOCITY(FT*FT/SEC) =   4.52
  LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20428.00 =  3421.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020428.0 TO NODE LR020429.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1668.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1664.00
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  CHANNEL LENGTH THRU SUBAREA(FEET) =   362.52
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.456
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 A        0.97      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       13.68      0.98      0.60    32
  MOBILE HOME PARK           A        3.07      0.98      0.25    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.25      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.96
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.52
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     69.97
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.52
  AVERAGE FLOW DEPTH(FEET) =   0.83   FLOOD WIDTH(FEET) =   59.08
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   1.34   Tc(MIN.) =  22.13
  SUBAREA AREA(ACRES) =   18.97       SUBAREA RUNOFF(CFS) =   16.39
  EFFECTIVE AREA(ACRES) =   77.12     AREA-AVERAGED Fm(INCH/HR) =   0.37
  AREA-AVERAGED Fp(INCH/HR) =   0.92  AREA-AVERAGED Ap =   0.40
  TOTAL AREA(ACRES) =     77.12         PEAK FLOW RATE(CFS) =      75.27

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.84   FLOOD WIDTH(FEET) =   60.88
  FLOW VELOCITY(FEET/SEC.) =   4.59   DEPTH*VELOCITY(FT*FT/SEC) =   3.87
  LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20429.00 =  3783.57 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020429.0 TO NODE LR020430.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1664.00  DOWNSTREAM ELEVATION(FEET) = 1628.00
  STREET LENGTH(FEET) =  1363.05   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.83

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      94.14
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.67
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  HALFSTREET FLOOD WIDTH(FEET) =   26.56
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.34
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.26
 STREET FLOW TRAVEL TIME(MIN.) =   3.58   Tc(MIN.) =  25.71
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.330
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A       21.36      0.98      0.60    32
 COMMERCIAL                 A        7.94      0.98      0.10    32
 MOBILE HOME PARK           A       14.89      0.98      0.25    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.39
 SUBAREA AREA(ACRES) =   44.19      SUBAREA RUNOFF(CFS) =   37.70
 EFFECTIVE AREA(ACRES) =    121.31    AREA-AVERAGED Fm(INCH/HR) =  0.38
 AREA-AVERAGED Fp(INCH/HR) =  0.94  AREA-AVERAGED Ap =  0.40
 TOTAL AREA(ACRES) =    121.31        PEAK FLOW RATE(CFS) =     104.27

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.69   HALFSTREET FLOOD WIDTH(FEET) =  27.60
 FLOW VELOCITY(FEET/SEC.) =  6.53   DEPTH*VELOCITY(FT*FT/SEC.) =   4.52
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L = 1363.1 FT WITH ELEVATION-DROP =  36.0 FT, IS   71.5 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20430.00
 LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20430.00 =  5146.62 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020430.0 TO NODE LR020449.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1628.00  DOWNSTREAM ELEVATION(FEET) = 1625.00
 STREET LENGTH(FEET) =  1350.21   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     109.04
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  1.06
   HALFSTREET FLOOD WIDTH(FEET) =   45.79
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.56
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.70
 STREET FLOW TRAVEL TIME(MIN.) =   8.80   Tc(MIN.) =  34.51
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 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.115
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 A        9.50      0.98      0.10    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        1.03      0.98      0.60    32
 COMMERCIAL                 B        0.37      0.75      0.10    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.15
 SUBAREA AREA(ACRES) =   10.90      SUBAREA RUNOFF(CFS) =    9.54
 EFFECTIVE AREA(ACRES) =    132.21    AREA-AVERAGED Fm(INCH/HR) =  0.36
 AREA-AVERAGED Fp(INCH/HR) =  0.94  AREA-AVERAGED Ap =  0.38
 TOTAL AREA(ACRES) =    132.21        PEAK FLOW RATE(CFS) =     104.27
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 1.04   HALFSTREET FLOOD WIDTH(FEET) =  44.93
 FLOW VELOCITY(FEET/SEC.) =  2.54   DEPTH*VELOCITY(FT*FT/SEC.) =   2.63

 *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
        THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
 SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
 ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
 ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
 ASSUME FULL-FLOWING PIPELINE
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.32
 PIPE-FLOW(CFS) =     35.88
 PIPEFLOW TRAVEL TIME(MIN.) =   5.21    Tc(MIN.) =  30.91
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.191
 SUBAREA AREA(ACRES) =   10.90      SUBAREA RUNOFF(CFS) =   10.28
 TOTAL AREA(ACRES) =    132.21        PEAK FLOW RATE(CFS) =    104.27
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   68.39
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.90
   HALFSTREET FLOOD WIDTH(FEET) =   38.03
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.31
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.08
 LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20449.00 =  6496.83 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020449.0 TO NODE LR020449.0 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  30.91
 RAINFALL INTENSITY(INCH/HR) =   1.19
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  AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.94
  AREA-AVERAGED Ap =  0.38
  EFFECTIVE STREAM AREA(ACRES) =   132.21
  TOTAL STREAM AREA(ACRES) =   132.21
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    104.27

****************************************************************************
  FLOW PROCESS FROM NODE LR020440.0 TO NODE LR020441.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   918.39
  ELEVATION DATA: UPSTREAM(FEET) =   1735.00  DOWNSTREAM(FEET) =   1706.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.596
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.041
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.48      0.75      0.60    56   12.60
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =      7.85
  TOTAL AREA(ACRES) =      5.48   PEAK FLOW RATE(CFS) =      7.85

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88

****************************************************************************
  FLOW PROCESS FROM NODE LR020441.0 TO NODE LR020442.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1706.00  DOWNSTREAM ELEVATION(FEET) = 1705.00
  STREET LENGTH(FEET) =   478.44   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.62
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.52
    HALFSTREET FLOOD WIDTH(FEET) =   18.93
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.35
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    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.70
  STREET FLOW TRAVEL TIME(MIN.) =   5.93   Tc(MIN.) =  18.52
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.619
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.22      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =     5.22      SUBAREA RUNOFF(CFS) =     5.50
  EFFECTIVE AREA(ACRES) =     10.70    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     10.70        PEAK FLOW RATE(CFS) =      11.27

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.53   HALFSTREET FLOOD WIDTH(FEET) =  19.36
  FLOW VELOCITY(FEET/SEC.) =  1.37   DEPTH*VELOCITY(FT*FT/SEC.) =   0.72
  LONGEST FLOWPATH FROM NODE  20440.00 TO NODE  20442.00 =  1396.83 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020442.0 TO NODE LR020443.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1705.00  DOWNSTREAM ELEVATION(FEET) = 1704.00
  STREET LENGTH(FEET) =   220.75   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      14.47
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.51
    HALFSTREET FLOOD WIDTH(FEET) =   18.44
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.92
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.98
  STREET FLOW TRAVEL TIME(MIN.) =   1.92   Tc(MIN.) =  20.44
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.526
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        6.59      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
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  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    6.59      SUBAREA RUNOFF(CFS) =    6.39
  EFFECTIVE AREA(ACRES) =     17.29    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     17.29        PEAK FLOW RATE(CFS) =      16.77

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.53   HALFSTREET FLOOD WIDTH(FEET) =  19.42
  FLOW VELOCITY(FEET/SEC.) =  2.03   DEPTH*VELOCITY(FT*FT/SEC.) =   1.07
  LONGEST FLOWPATH FROM NODE  20440.00 TO NODE  20443.00 =  1617.58 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020443.0 TO NODE LR020444.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1704.00  DOWNSTREAM ELEVATION(FEET) = 1702.00
  STREET LENGTH(FEET) =   263.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      20.01
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.52
    HALFSTREET FLOOD WIDTH(FEET) =   18.87
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.55
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.32
  STREET FLOW TRAVEL TIME(MIN.) =   1.72   Tc(MIN.) =  22.16
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.454
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        7.15      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    7.15      SUBAREA RUNOFF(CFS) =    6.47
  EFFECTIVE AREA(ACRES) =     24.44    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     24.44        PEAK FLOW RATE(CFS) =      22.11

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88
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  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.53   HALFSTREET FLOOD WIDTH(FEET) =  19.54
  FLOW VELOCITY(FEET/SEC.) =  2.64   DEPTH*VELOCITY(FT*FT/SEC.) =   1.40
  LONGEST FLOWPATH FROM NODE  20440.00 TO NODE  20444.00 =  1881.08 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020444.0 TO NODE LR020445.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1702.00  DOWNSTREAM ELEVATION(FEET) = 1701.00
  STREET LENGTH(FEET) =   498.43   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      27.64
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.68
    HALFSTREET FLOOD WIDTH(FEET) =   27.17
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.78
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.22
  STREET FLOW TRAVEL TIME(MIN.) =   4.66   Tc(MIN.) =  26.82
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.297
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       14.46      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   14.46      SUBAREA RUNOFF(CFS) =   11.04
  EFFECTIVE AREA(ACRES) =     38.90    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     38.90        PEAK FLOW RATE(CFS) =      29.69

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.70   HALFSTREET FLOOD WIDTH(FEET) =  27.96
  FLOW VELOCITY(FEET/SEC.) =  1.81   DEPTH*VELOCITY(FT*FT/SEC.) =   1.27
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  498.4 FT WITH ELEVATION-DROP =   1.0 FT, IS   16.3 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20445.00
  LONGEST FLOWPATH FROM NODE  20440.00 TO NODE  20445.00 =  2379.51 FEET.

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 FLOW PROCESS FROM NODE LR020445.0 TO NODE LR020446.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1701.00  DOWNSTREAM ELEVATION(FEET) = 1700.00
 STREET LENGTH(FEET) =   790.41   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      36.26
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.80
   HALFSTREET FLOOD WIDTH(FEET) =   33.09
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.60
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.28
 STREET FLOW TRAVEL TIME(MIN.) =   8.22   Tc(MIN.) =  35.04
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.105
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       22.19      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =   22.19      SUBAREA RUNOFF(CFS) =   13.10
 EFFECTIVE AREA(ACRES) =     61.09    AREA-AVERAGED Fm(INCH/HR) =  0.45
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =     61.09        PEAK FLOW RATE(CFS) =      36.06

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.80   HALFSTREET FLOOD WIDTH(FEET) =  33.03
 FLOW VELOCITY(FEET/SEC.) =  1.60   DEPTH*VELOCITY(FT*FT/SEC.) =   1.28
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  790.4 FT WITH ELEVATION-DROP =   1.0 FT, IS   19.8 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20446.00
 LONGEST FLOWPATH FROM NODE  20440.00 TO NODE  20446.00 =  3169.92 FEET.

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 FLOW PROCESS FROM NODE LR020446.0 TO NODE LR020447.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1700.00  DOWNSTREAM ELEVATION(FEET) = 1670.00
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 STREET LENGTH(FEET) =   962.00   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.83

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      43.05
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.56
   HALFSTREET FLOOD WIDTH(FEET) =   20.17
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.06
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.84
 STREET FLOW TRAVEL TIME(MIN.) =   3.17   Tc(MIN.) =  38.21
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.049
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        2.08      0.75      0.60    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A       24.90      0.98      0.60    32
 SCHOOL                     A        1.29      0.98      0.60    32
 SCHOOL                     B        3.53      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.93
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =   31.80      SUBAREA RUNOFF(CFS) =   13.96
 EFFECTIVE AREA(ACRES) =     92.89    AREA-AVERAGED Fm(INCH/HR) =  0.49
 AREA-AVERAGED Fp(INCH/HR) =  0.81  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =     92.89        PEAK FLOW RATE(CFS) =      46.94

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.58   HALFSTREET FLOOD WIDTH(FEET) =  20.87
 FLOW VELOCITY(FEET/SEC.) =  5.16   DEPTH*VELOCITY(FT*FT/SEC.) =   2.97
 LONGEST FLOWPATH FROM NODE  20440.00 TO NODE  20447.00 =  4131.92 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020447.0 TO NODE LR020448.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1670.00  DOWNSTREAM ELEVATION(FEET) = 1645.00
 STREET LENGTH(FEET) =   877.54   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
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 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.85

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      57.66
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.62
   HALFSTREET FLOOD WIDTH(FEET) =   23.04
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.24
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.25
 STREET FLOW TRAVEL TIME(MIN.) =   2.79   Tc(MIN.) =  41.00
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.005
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        9.63      0.98      0.60    32
 COMMERCIAL                 A       12.07      0.98      0.10    32
 COMMERCIAL                 B        0.31      0.75      0.10    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        2.23      0.75      0.60    56
 SCHOOL                     B       11.63      0.75      0.60    56
 SCHOOL                     A        1.95      0.98      0.60    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.44
 SUBAREA AREA(ACRES) =   37.82      SUBAREA RUNOFF(CFS) =   21.44
 EFFECTIVE AREA(ACRES) =    130.71    AREA-AVERAGED Fm(INCH/HR) =  0.45
 AREA-AVERAGED Fp(INCH/HR) =  0.82  AREA-AVERAGED Ap =  0.55
 TOTAL AREA(ACRES) =    130.71        PEAK FLOW RATE(CFS) =      64.75

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.64   HALFSTREET FLOOD WIDTH(FEET) =  24.10
 FLOW VELOCITY(FEET/SEC.) =  5.40   DEPTH*VELOCITY(FT*FT/SEC.) =   3.46
 LONGEST FLOWPATH FROM NODE  20440.00 TO NODE  20448.00 =  5009.46 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020448.0 TO NODE LR020449.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1645.00  DOWNSTREAM ELEVATION(FEET) = 1625.00
 STREET LENGTH(FEET) =   820.27   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
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 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.88

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      73.05
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.68
   HALFSTREET FLOOD WIDTH(FEET) =   26.61
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.24
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.56
 STREET FLOW TRAVEL TIME(MIN.) =   2.61   Tc(MIN.) =  43.61
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.969
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 A        3.48      0.98      0.10    32
 COMMERCIAL                 B        6.53      0.75      0.10    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        0.34      0.98      0.60    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.38      0.75      0.60    56
 SCHOOL                     A        0.64      0.98      0.60    32
 SCHOOL                     B       16.30      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.77
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.43
 SUBAREA AREA(ACRES) =   28.67      SUBAREA RUNOFF(CFS) =   16.60
 EFFECTIVE AREA(ACRES) =    159.38    AREA-AVERAGED Fm(INCH/HR) =  0.43
 AREA-AVERAGED Fp(INCH/HR) =  0.81  AREA-AVERAGED Ap =  0.53
 TOTAL AREA(ACRES) =    159.38        PEAK FLOW RATE(CFS) =      77.06

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.69   HALFSTREET FLOOD WIDTH(FEET) =  27.04
 FLOW VELOCITY(FEET/SEC.) =  5.35   DEPTH*VELOCITY(FT*FT/SEC.) =   3.68
 LONGEST FLOWPATH FROM NODE  20440.00 TO NODE  20449.00 =  5829.73 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020449.0 TO NODE LR020449.0 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  43.61
 RAINFALL INTENSITY(INCH/HR) =   0.97
 AREA-AVERAGED Fm(INCH/HR) =  0.43
 AREA-AVERAGED Fp(INCH/HR) =  0.81
 AREA-AVERAGED Ap =  0.53
 EFFECTIVE STREAM AREA(ACRES) =   159.38
 TOTAL STREAM AREA(ACRES) =   159.38
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     77.06

 ** CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
```

```
    1    104.27  30.91    1.191  0.94( 0.36) 0.38   132.2 LR020420.0
    2     77.06  43.61    0.969  0.81( 0.43) 0.53   159.4 LR020440.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    181.33  30.91    1.191  0.87( 0.39) 0.45   245.2 LR020420.0
      2    153.58  43.61    0.969  0.86( 0.40) 0.46   291.6 LR020440.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    181.33    Tc(MIN.) =    30.91
  EFFECTIVE AREA(ACRES) =   245.19   AREA-AVERAGED Fm(INCH/HR) =  0.39
  AREA-AVERAGED Fp(INCH/HR) =  0.87  AREA-AVERAGED Ap =  0.45
  TOTAL AREA(ACRES) =    291.59
  LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20449.00 =  6496.83 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020449.0 TO NODE LR020450.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1625.00  DOWNSTREAM ELEVATION(FEET) = 1595.00
  STREET LENGTH(FEET) =  1304.02   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.89

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     222.00
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.93
    HALFSTREET FLOOD WIDTH(FEET) =   39.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.35
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.81
  STREET FLOW TRAVEL TIME(MIN.) =   2.96   Tc(MIN.) =  33.87
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.127
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 A       33.74      0.98      0.10    32
  MOBILE HOME PARK           B       22.38      0.75      0.25    56
  COMMERCIAL                 B       19.61      0.75      0.10    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        9.23      0.63      1.00    65
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        8.18      0.75      0.60    56
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  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        7.04      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.77
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.29
  SUBAREA AREA(ACRES) =  100.18      SUBAREA RUNOFF(CFS) =   81.36
  EFFECTIVE AREA(ACRES) =    345.37    AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.85  AREA-AVERAGED Ap =  0.40
  TOTAL AREA(ACRES) =    391.77        PEAK FLOW RATE(CFS) =     243.90

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.95   HALFSTREET FLOOD WIDTH(FEET) =  40.34
  FLOW VELOCITY(FEET/SEC.) =  7.54   DEPTH*VELOCITY(FT*FT/SEC.) =   7.19

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.89
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.67
  PIPE-FLOW(CFS) =     57.36
  PIPEFLOW TRAVEL TIME(MIN.) =   1.86    Tc(MIN.) =  32.78
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.150
  SUBAREA AREA(ACRES) =  100.18      SUBAREA RUNOFF(CFS) =   83.38
  TOTAL AREA(ACRES) =    391.77        PEAK FLOW RATE(CFS) =    250.87

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =  193.52
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.89
    HALFSTREET FLOOD WIDTH(FEET) =   37.11
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.08
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.30

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    250.87  32.78    1.150  0.85( 0.34) 0.40   345.4 LR020420.0
      2    207.96  45.61    0.943  0.85( 0.35) 0.42   391.8 LR020440.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    250.87  Tc(MIN.) =  32.78
  AREA-AVERAGED Fm(INCH/HR) =  0.34  AREA-AVERAGED Fp(INCH/HR) =  0.85
  AREA-AVERAGED Ap =  0.40  EFFECTIVE AREA(ACRES) =    345.37
  LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20450.00 =  7800.85 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020450.0 TO NODE LR020451.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1595.00  DOWNSTREAM(FEET) =   1530.00
```

```
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2921.86   CHANNEL SLOPE =  0.0222
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    250.87
  FLOW VELOCITY(FEET/SEC.) =   8.44   FLOW DEPTH(FEET) =   2.10
  TRAVEL TIME(MIN.) =   5.77   Tc(MIN.) =  38.55
  LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20451.00 = 10722.71 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020451.0 TO NODE LR020451.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  38.55
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.043
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       19.78      0.75      0.60    56
  COMMERCIAL                 B        5.95      0.75      0.10    56
  MOBILE HOME PARK           B        6.72      0.75      0.25    56
  PUBLIC PARK                B        6.76      0.75      0.85    56
  SCHOOL                     B        5.51      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.52
  SUBAREA AREA(ACRES) =   44.72      SUBAREA RUNOFF(CFS) =   26.37
  EFFECTIVE AREA(ACRES) =    390.09   AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.83  AREA-AVERAGED Ap =  0.48
  TOTAL AREA(ACRES) =    436.49       PEAK FLOW RATE(CFS) =     250.87
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88

****************************************************************************
  FLOW PROCESS FROM NODE LR020451.0 TO NODE LR020452.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1530.00  DOWNSTREAM(FEET) =   1510.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1273.13   CHANNEL SLOPE =  0.0157
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    250.87
  FLOW VELOCITY(FEET/SEC.) =   7.47   FLOW DEPTH(FEET) =   2.30
  TRAVEL TIME(MIN.) =   2.84   Tc(MIN.) =  41.39
  LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20452.00 = 11995.84 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020452.0 TO NODE LR020452.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  41.39
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.000
  SUBAREA LOSS RATE DATA(AMC  II):
```



```
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        6.50      0.75      0.60    56
  COMMERCIAL                 B        3.31      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.25      0.98      0.60    32
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.07      0.61      1.00    66
  PUBLIC PARK                B        0.12      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.44
  SUBAREA AREA(ACRES) =   10.25      SUBAREA RUNOFF(CFS) =    6.13
  EFFECTIVE AREA(ACRES) =    400.34   AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.83  AREA-AVERAGED Ap =  0.48
  TOTAL AREA(ACRES) =    446.74       PEAK FLOW RATE(CFS) =     250.87
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88

****************************************************************************
  FLOW PROCESS FROM NODE LR020452.0 TO NODE LR020452.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    250.87  41.39    1.000  0.83( 0.35) 0.42   400.3 LR020420.0
      2    207.96  54.73    0.845  0.83( 0.36) 0.43   446.7 LR020440.0
  LONGEST FLOWPATH FROM NODE  20420.00 TO NODE  20452.00 = 11995.84 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     1797.20    Tc(MIN.) =  52.99
  AREA-AVERAGED Fm(INCH/HR) =  0.58    Ybar = 0.65
  TOTAL AREA(ACRES) =    4897.39
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20452.00 = 27096.44 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.62;1H= 0.82;3H= 1.47;6H= 2.15;24H= 4.50
  S-GRAPH: VALLEY(DEV.)= 49.2%;VALLEY(UNDEV.)/DESERT= 50.8%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.88; LAG(HR) = 0.71; Fm(INCH/HR) = 0.56; Ybar = 0.63
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.78; 30M = 0.78; 1HR = 0.78;
  3HR = 0.97; 6HR = 0.98; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   5344.13
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20452.00 = 27096.44 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0401; Lca/L=0.4,n=.0360; Lca/L=0.5,n=.0331;Lca/L=0.6,n=.0308
  TIME OF PEAK FLOW(HR) = 16.75  RUNOFF VOLUME(AF) =     781.23
  PEAK FLOW RATE(CFS) =    1986.45

****************************************************************************
  FLOW PROCESS FROM NODE LR020452.0 TO NODE LR020452.0 IS CODE =  12
```

```
------------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
==============================================================================

******************************************************************************
  FLOW PROCESS FROM NODE LR020452.0 TO NODE LR020453.0 IS CODE =  54
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1510.00  DOWNSTREAM(FEET) =   1440.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3395.49   CHANNEL SLOPE =  0.0206
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   6.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   1986.45
  FLOW VELOCITY(FEET/SEC.) =  26.70   FLOW DEPTH(FEET) =   3.80
  TRAVEL TIME(MIN.) =   2.12   Tc(MIN.) =  55.11
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20453.00 = 30491.93 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE LR020453.0 TO NODE LR020453.0 IS CODE =  81
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
  MAINLINE Tc(MIN) =  55.11
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.842
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B       20.13      0.75      0.25    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       19.32      0.75      0.60    56
  SCHOOL                     B        8.94      0.75      0.60    56
  COMMERCIAL                 B        4.10      0.75      0.10    56
  PUBLIC PARK                B        1.64      0.75      0.85    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.19      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.44
  SUBAREA AREA(ACRES) =   54.32
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.62;1H= 0.82;3H= 1.47;6H= 2.15;24H= 4.50
  S-GRAPH: VALLEY(DEV.)= 49.7%;VALLEY(UNDEV.)/DESERT= 50.3%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.92; LAG(HR) = 0.73; Fm(INCH/HR) = 0.56; Ybar = 0.63
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.78; 30M = 0.78; 1HR = 0.78;
  3HR = 0.97; 6HR = 0.98; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   5398.45
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20453.00 = 30491.93 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0376; Lca/L=0.4,n=.0337; Lca/L=0.5,n=.0310;Lca/L=0.6,n=.0289
  TIME OF PEAK FLOW(HR) = 16.75  RUNOFF VOLUME(AF) =     791.82
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1960.23
  TOTAL AREA(ACRES) =   5398.45       PEAK FLOW RATE(CFS) =    1986.45
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
```



```
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88

******************************************************************************
  FLOW PROCESS FROM NODE LR020453.0 TO NODE LR020454.0 IS CODE =  54
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1440.00  DOWNSTREAM(FEET) =   1395.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3128.68   CHANNEL SLOPE =  0.0144
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   6.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   1986.45
  FLOW VELOCITY(FEET/SEC.) =  23.42   FLOW DEPTH(FEET) =   4.17
  TRAVEL TIME(MIN.) =   2.23   Tc(MIN.) =  57.34
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20454.00 = 33620.61 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE LR020454.0 TO NODE LR020454.0 IS CODE =  81
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
  MAINLINE Tc(MIN) =  57.34
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.822
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  SCHOOL                     B       17.44      0.75      0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.70      0.75      0.60    56
  PUBLIC PARK                B        9.17      0.75      0.85    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        5.37      0.75      0.50    56
  COMMERCIAL                 B        1.64      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
  SUBAREA AREA(ACRES) =   37.32
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.62;1H= 0.82;3H= 1.47;6H= 2.14;24H= 4.49
  S-GRAPH: VALLEY(DEV.)= 50.1%;VALLEY(UNDEV.)/DESERT= 49.9%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.96; LAG(HR) = 0.76; Fm(INCH/HR) = 0.56; Ybar = 0.63
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.78; 30M = 0.78; 1HR = 0.78;
  3HR = 0.97; 6HR = 0.98; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   5435.77
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20454.00 = 33620.61 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0358; Lca/L=0.4,n=.0321; Lca/L=0.5,n=.0295;Lca/L=0.6,n=.0275
  TIME OF PEAK FLOW(HR) = 16.83  RUNOFF VOLUME(AF) =     797.18
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1904.76
  TOTAL AREA(ACRES) =   5435.77       PEAK FLOW RATE(CFS) =    1986.45
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.88

******************************************************************************
```

```
  FLOW PROCESS FROM NODE LR020454.0 TO NODE LR020454.0 IS CODE = 152
 ----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
 ============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20454.dna
 ============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =   5435.77  TC(MIN.) =     57.34
  AREA-AVERAGED Fm(INCH/HR)=  0.56   Ybar =  0.63
  PEAK FLOW RATE(CFS)   =   1986.45
 ============================================================================
 ============================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                          San Bernardino County
                    Transportation/ Flood Control Department

                          Water Resources Division

 ************************ DESCRIPTION OF STUDY *************************
* LR0205ZZ                                                             *
* 10-Year Storm                                                        *
*                                                                      *
 ************************************************************************

  FILE NAME: LR0205ZZ.Z10
  TIME/DATE OF STUDY: 09:58 02/22/2006
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 0.8000

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
```



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 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


************************************************************************
  FLOW PROCESS FROM NODE LR020500.0 TO NODE LR020501.0 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   672.35
  ELEVATION DATA: UPSTREAM(FEET) =   1595.00  DOWNSTREAM(FEET) =   1591.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.525
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.800
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.95      0.75       0.60    56   15.53
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.88      0.98       0.60    32   15.53
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 A        0.12      0.88       1.00    44   26.60
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.61
  SUBAREA RUNOFF(CFS) =      4.65
  TOTAL AREA(ACRES) =      3.95   PEAK FLOW RATE(CFS) =      4.65

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.90

************************************************************************
  FLOW PROCESS FROM NODE LR020501.0 TO NODE LR020502.0 IS CODE =  63
------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
========================================================================
  UPSTREAM ELEVATION(FEET) = 1591.00  DOWNSTREAM ELEVATION(FEET) = 1587.00
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 STREET LENGTH(FEET) =   262.68   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.76
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.42
   HALFSTREET FLOOD WIDTH(FEET) =   14.84
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.91
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.23
 STREET FLOW TRAVEL TIME(MIN.) =   1.50   Tc(MIN.) =  17.03
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.703
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        3.30      0.75      0.60    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        0.37      0.98      0.60    32
 AGRICULTURAL FAIR COVER
 "ORCHARDS"                 A        0.16      0.88      1.00    44
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.78
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.62
 SUBAREA AREA(ACRES) =    3.83      SUBAREA RUNOFF(CFS) =    4.22
 EFFECTIVE AREA(ACRES) =      7.78    AREA-AVERAGED Fm(INCH/HR) =  0.49
 AREA-AVERAGED Fp(INCH/HR) =  0.79  AREA-AVERAGED Ap =  0.61
 TOTAL AREA(ACRES) =      7.78        PEAK FLOW RATE(CFS) =       8.52

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.90

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.45   HALFSTREET FLOOD WIDTH(FEET) =  16.32
 FLOW VELOCITY(FEET/SEC.) =  3.06   DEPTH*VELOCITY(FT*FT/SEC.) =   1.39
 LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20502.00 =   935.03 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020502.0 TO NODE LR020503.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1587.00  DOWNSTREAM ELEVATION(FEET) = 1580.00
 STREET LENGTH(FEET) =   296.66   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
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 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.86

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      11.21
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.46
   HALFSTREET FLOOD WIDTH(FEET) =   16.63
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.89
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.78
 STREET FLOW TRAVEL TIME(MIN.) =   1.27   Tc(MIN.) =  18.30
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.631
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        2.45      0.75      0.60    56
 MOBILE HOME PARK           B        1.73      0.75      0.25    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        0.21      0.98      0.60    32
 MOBILE HOME PARK           A        0.20      0.98      0.25    32
 AGRICULTURAL FAIR COVER
 "ORCHARDS"                 A        0.11      0.88      1.00    44
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.77
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.47
 SUBAREA AREA(ACRES) =    4.70      SUBAREA RUNOFF(CFS) =    5.38
 EFFECTIVE AREA(ACRES) =     12.48    AREA-AVERAGED Fm(INCH/HR) =  0.44
 AREA-AVERAGED Fp(INCH/HR) =  0.79  AREA-AVERAGED Ap =  0.56
 TOTAL AREA(ACRES) =     12.48        PEAK FLOW RATE(CFS) =      13.40

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.90

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.48   HALFSTREET FLOOD WIDTH(FEET) =  17.88
 FLOW VELOCITY(FEET/SEC.) =  4.04   DEPTH*VELOCITY(FT*FT/SEC.) =   1.95
 LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20503.00 =  1231.69 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020503.0 TO NODE LR020504.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1580.00  DOWNSTREAM ELEVATION(FEET) = 1570.00
 STREET LENGTH(FEET) =   416.03   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
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  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.86

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      17.28
    ***STREET FLOW SPLITS OVER STREET-CROWN***
    FULL DEPTH(FEET) =    0.49   FLOOD WIDTH(FEET) =   18.00
    FULL HALF-STREET VELOCITY(FEET/SEC.) =    4.10
    SPLIT DEPTH(FEET) =    0.33   SPLIT FLOOD WIDTH(FEET) =   10.38
    SPLIT FLOW(CFS) =    3.51   SPLIT VELOCITY(FEET/SEC.) =    2.93
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.49
    HALFSTREET FLOOD WIDTH(FEET) =   18.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.10
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.99
  STREET FLOW TRAVEL TIME(MIN.) =   1.69   Tc(MIN.) =  19.99
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.547
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.28      0.75      0.60    56
  MOBILE HOME PARK           B        5.56      0.75      0.25    56
  MOBILE HOME PARK           A        0.58      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.77
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.27
  SUBAREA AREA(ACRES) =    6.42      SUBAREA RUNOFF(CFS) =    7.76
  EFFECTIVE AREA(ACRES) =     18.90    AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.78  AREA-AVERAGED Ap =  0.46
  TOTAL AREA(ACRES) =     18.90        PEAK FLOW RATE(CFS) =      20.21

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.90

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.49   HALFSTREET FLOOD WIDTH(FEET) =  18.00
  FLOW VELOCITY(FEET/SEC.) =  4.10   DEPTH*VELOCITY(FT*FT/SEC.) =   1.99
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20504.00 =  1647.72 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020504.0 TO NODE LR020505.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1570.00  DOWNSTREAM ELEVATION(FEET) = 1560.00
  STREET LENGTH(FEET) =   387.53   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84
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    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      23.14
    ***STREET FLOW SPLITS OVER STREET-CROWN***
    FULL DEPTH(FEET) =    0.49   FLOOD WIDTH(FEET) =   18.00
    FULL HALF-STREET VELOCITY(FEET/SEC.) =    4.25
    SPLIT DEPTH(FEET) =    0.42   SPLIT FLOOD WIDTH(FEET) =   14.91
    SPLIT FLOW(CFS) =    8.88   SPLIT VELOCITY(FEET/SEC.) =    3.79
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.49
    HALFSTREET FLOOD WIDTH(FEET) =   18.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.25
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.07
  STREET FLOW TRAVEL TIME(MIN.) =   1.52   Tc(MIN.) =  21.51
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.480
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.33      0.75      0.60    56
  MOBILE HOME PARK           B        1.58      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.51
  SUBAREA AREA(ACRES) =    5.91      SUBAREA RUNOFF(CFS) =    5.86
  EFFECTIVE AREA(ACRES) =     24.81    AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.77  AREA-AVERAGED Ap =  0.47
  TOTAL AREA(ACRES) =     24.81        PEAK FLOW RATE(CFS) =      24.94

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.90

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.49   HALFSTREET FLOOD WIDTH(FEET) =  18.00
  FLOW VELOCITY(FEET/SEC.) =  4.25   DEPTH*VELOCITY(FT*FT/SEC.) =   2.07
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20505.00 =  2035.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020505.0 TO NODE LR020506.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1560.00  DOWNSTREAM ELEVATION(FEET) = 1535.00
  STREET LENGTH(FEET) =  1240.51   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      31.96
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.51
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  HALFSTREET FLOOD WIDTH(FEET) =   18.75
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.12
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.12
STREET FLOW TRAVEL TIME(MIN.) =   5.02   Tc(MIN.) =  26.53
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.305
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B       14.33      0.75      0.60    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       A        4.53      0.98      0.60    32
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
SUBAREA AREA(ACRES) =   18.86      SUBAREA RUNOFF(CFS) =   13.98
EFFECTIVE AREA(ACRES) =     43.67    AREA-AVERAGED Fm(INCH/HR) =  0.41
AREA-AVERAGED Fp(INCH/HR) =  0.79  AREA-AVERAGED Ap =  0.53
TOTAL AREA(ACRES) =     43.67        PEAK FLOW RATE(CFS) =      35.01

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.90

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.53   HALFSTREET FLOOD WIDTH(FEET) =  19.36
FLOW VELOCITY(FEET/SEC.) =  4.26   DEPTH*VELOCITY(FT*FT/SEC.) =   2.24
LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20506.00 =  3275.76 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020506.0 TO NODE LR020507.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1535.00  DOWNSTREAM ELEVATION(FEET) = 1518.00
  STREET LENGTH(FEET) =   947.01   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      40.02
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.55
    HALFSTREET FLOOD WIDTH(FEET) =   20.70
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.30
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.38
  STREET FLOW TRAVEL TIME(MIN.) =   3.67   Tc(MIN.) =  30.20
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.208
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```



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     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        6.54      0.75      0.60    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       A        9.86      0.98      0.60    32
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.88
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
SUBAREA AREA(ACRES) =   16.40      SUBAREA RUNOFF(CFS) =    9.99
EFFECTIVE AREA(ACRES) =     60.07    AREA-AVERAGED Fm(INCH/HR) =  0.45
AREA-AVERAGED Fp(INCH/HR) =  0.82  AREA-AVERAGED Ap =  0.55
TOTAL AREA(ACRES) =     60.07        PEAK FLOW RATE(CFS) =      41.17

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.90

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.56   HALFSTREET FLOOD WIDTH(FEET) =  20.94
FLOW VELOCITY(FEET/SEC.) =  4.33   DEPTH*VELOCITY(FT*FT/SEC.) =   2.42
LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20507.00 =  4222.77 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020507.0 TO NODE LR020508.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1518.00  DOWNSTREAM ELEVATION(FEET) = 1490.50
  STREET LENGTH(FEET) =  1523.12   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      45.93
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.57
    HALFSTREET FLOOD WIDTH(FEET) =   21.74
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.51
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.59
  STREET FLOW TRAVEL TIME(MIN.) =   5.63   Tc(MIN.) =  35.83
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.090
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       11.25      0.75      0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        6.62      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.83
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
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```
  SUBAREA AREA(ACRES) =   17.87      SUBAREA RUNOFF(CFS) =    9.50
  EFFECTIVE AREA(ACRES) =     77.94    AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.82  AREA-AVERAGED Ap =  0.56
  TOTAL AREA(ACRES) =     77.94        PEAK FLOW RATE(CFS) =      44.31

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.90

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.57   HALFSTREET FLOOD WIDTH(FEET) =  21.49
  FLOW VELOCITY(FEET/SEC.) =  4.44   DEPTH*VELOCITY(FT*FT/SEC.) =   2.53
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20508.00 =  5745.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020508.0 TO NODE LR020509.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1490.50  DOWNSTREAM ELEVATION(FEET) = 1490.00
  STREET LENGTH(FEET) =   621.21   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      44.72
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.95
    HALFSTREET FLOOD WIDTH(FEET) =   40.10
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.40
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.33
  STREET FLOW TRAVEL TIME(MIN.) =   7.39   Tc(MIN.) =  43.22
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.974
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        2.36      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =    2.36      SUBAREA RUNOFF(CFS) =    0.83
  EFFECTIVE AREA(ACRES) =     80.30    AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.83  AREA-AVERAGED Ap =  0.56
  TOTAL AREA(ACRES) =     80.30        PEAK FLOW RATE(CFS) =      44.31
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
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  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.90

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.94   HALFSTREET FLOOD WIDTH(FEET) =  39.92
  FLOW VELOCITY(FEET/SEC.) =  1.40   DEPTH*VELOCITY(FT*FT/SEC.) =   1.32
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20509.00 =  6367.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020509.0 TO NODE LR020518.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1490.00  DOWNSTREAM ELEVATION(FEET) = 1489.50
  STREET LENGTH(FEET) =   654.22   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      44.70
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.96
    HALFSTREET FLOOD WIDTH(FEET) =   40.46
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.37
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.31
  STREET FLOW TRAVEL TIME(MIN.) =   7.93   Tc(MIN.) =  51.15
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.880
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        2.47      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =    2.47      SUBAREA RUNOFF(CFS) =    0.78
  EFFECTIVE AREA(ACRES) =     82.77    AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.83  AREA-AVERAGED Ap =  0.56
  TOTAL AREA(ACRES) =     82.77        PEAK FLOW RATE(CFS) =      44.31
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.90

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.95   HALFSTREET FLOOD WIDTH(FEET) =  40.34
  FLOW VELOCITY(FEET/SEC.) =  1.37   DEPTH*VELOCITY(FT*FT/SEC.) =   1.31
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20518.00 =  7021.32 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR020518.0 TO NODE LR020518.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  51.15
  RAINFALL INTENSITY(INCH/HR) =   0.88
  AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.83
  AREA-AVERAGED Ap =  0.56
  EFFECTIVE STREAM AREA(ACRES) =    82.77
  TOTAL STREAM AREA(ACRES) =    82.77
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     44.31

****************************************************************************
  FLOW PROCESS FROM NODE LR020510.0 TO NODE LR020511.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   568.77
  ELEVATION DATA: UPSTREAM(FEET) =   1595.00  DOWNSTREAM(FEET) =   1590.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.909
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.357
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.24      0.98      0.60    32   13.43
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 A        0.98      0.88      1.00    44   23.01
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.57      0.75      0.60    56   13.43
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        1.82      0.63      1.00    65   23.01
  COMMERCIAL                 B        0.06      0.75      0.10    56    9.91
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.73
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.90
  SUBAREA RUNOFF(CFS) =      5.62
  TOTAL AREA(ACRES) =      3.67   PEAK FLOW RATE(CFS) =      5.62

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.90

****************************************************************************
  FLOW PROCESS FROM NODE LR020511.0 TO NODE LR020512.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1590.00  DOWNSTREAM ELEVATION(FEET) = 1580.00
  STREET LENGTH(FEET) =   249.41   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00
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  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.78

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.89
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.36
    HALFSTREET FLOOD WIDTH(FEET) =    9.84
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.84
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.36
  STREET FLOW TRAVEL TIME(MIN.) =   1.08   Tc(MIN.) =  10.99
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.215
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 A        1.59      0.88      1.00    44
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        2.00      0.63      1.00    65
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.46      0.75      0.60    56
  MOBILE HOME PARK           B        0.58      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.87
  SUBAREA AREA(ACRES) =    4.63      SUBAREA RUNOFF(CFS) =    6.55
  EFFECTIVE AREA(ACRES) =      8.30    AREA-AVERAGED Fm(INCH/HR) =  0.65
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.88
  TOTAL AREA(ACRES) =      8.30        PEAK FLOW RATE(CFS) =      11.70

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.90

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.38   HALFSTREET FLOOD WIDTH(FEET) =  11.15
  FLOW VELOCITY(FEET/SEC.) =  4.09   DEPTH*VELOCITY(FT*FT/SEC.) =   1.56
  LONGEST FLOWPATH FROM NODE  20510.00 TO NODE  20512.00 =   818.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020512.0 TO NODE LR020513.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1580.00  DOWNSTREAM ELEVATION(FEET) = 1575.00
  STREET LENGTH(FEET) =   306.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
```

```
 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.98

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      16.94
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.47
   HALFSTREET FLOOD WIDTH(FEET) =   15.78
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.16
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.50
 STREET FLOW TRAVEL TIME(MIN.) =   1.61   Tc(MIN.) =  12.61
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.040
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL FAIR COVER
 "ORCHARDS"                 A        1.37      0.88      1.00    44
 MOBILE HOME PARK           A        1.25      0.98      0.25    32
 AGRICULTURAL FAIR COVER
 "ORCHARDS"                 B        1.07      0.63      1.00    65
 MOBILE HOME PARK           B        2.91      0.75      0.25    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.58      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.78
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.53
 SUBAREA AREA(ACRES) =    7.18      SUBAREA RUNOFF(CFS) =   10.49
 EFFECTIVE AREA(ACRES) =     15.48    AREA-AVERAGED Fm(INCH/HR) =  0.54
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.72
 TOTAL AREA(ACRES) =     15.48        PEAK FLOW RATE(CFS) =      20.89

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.90

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.50   HALFSTREET FLOOD WIDTH(FEET) =  17.18
 FLOW VELOCITY(FEET/SEC.) =  3.32   DEPTH*VELOCITY(FT*FT/SEC.) =   1.67
 LONGEST FLOWPATH FROM NODE  20510.00 TO NODE  20513.00 =  1124.68 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020513.0 TO NODE LR020514.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1575.00  DOWNSTREAM ELEVATION(FEET) = 1570.00
 STREET LENGTH(FEET) =   416.53   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
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 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.06

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      28.96
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.57
   HALFSTREET FLOOD WIDTH(FEET) =   20.81
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.20
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.84
 STREET FLOW TRAVEL TIME(MIN.) =   2.17   Tc(MIN.) =  14.77
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.855
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 MOBILE HOME PARK           A        3.78      0.98      0.25    32
 MOBILE HOME PARK           B        6.42      0.75      0.25    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.82      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.82
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.28
 SUBAREA AREA(ACRES) =   11.02      SUBAREA RUNOFF(CFS) =   16.15
 EFFECTIVE AREA(ACRES) =     26.50    AREA-AVERAGED Fm(INCH/HR) =  0.41
 AREA-AVERAGED Fp(INCH/HR) =  0.77  AREA-AVERAGED Ap =  0.53
 TOTAL AREA(ACRES) =     26.50        PEAK FLOW RATE(CFS) =      34.46

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.90

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.60   HALFSTREET FLOOD WIDTH(FEET) =  22.28
 FLOW VELOCITY(FEET/SEC.) =  3.34   DEPTH*VELOCITY(FT*FT/SEC.) =   2.02
 LONGEST FLOWPATH FROM NODE  20510.00 TO NODE  20514.00 =  1541.21 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020514.0 TO NODE LR020515.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1570.00  DOWNSTREAM ELEVATION(FEET) = 1565.00
 STREET LENGTH(FEET) =   392.53   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.04

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      41.51
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.63
   HALFSTREET FLOOD WIDTH(FEET) =   23.69
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.58
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.26
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  STREET FLOW TRAVEL TIME(MIN.) =   1.83   Tc(MIN.) =  16.60
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.729
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B        5.83      0.75      0.25    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.98      0.75      0.60    56
  MOBILE HOME PARK           A        0.20      0.98      0.25    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.41
  SUBAREA AREA(ACRES) =   11.01      SUBAREA RUNOFF(CFS) =   14.10
  EFFECTIVE AREA(ACRES) =     37.51    AREA-AVERAGED Fm(INCH/HR) =  0.38
  AREA-AVERAGED Fp(INCH/HR) =  0.76  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =     37.51        PEAK FLOW RATE(CFS) =      45.57

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.90

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.65   HALFSTREET FLOOD WIDTH(FEET) =  24.56
  FLOW VELOCITY(FEET/SEC.) =  3.66   DEPTH*VELOCITY(FT*FT/SEC.) =   2.38
  LONGEST FLOWPATH FROM NODE  20510.00 TO NODE  20515.00 =  1933.74 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020515.0 TO NODE LR020516.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1565.00  DOWNSTREAM ELEVATION(FEET) = 1530.00
  STREET LENGTH(FEET) =  1215.58   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      63.97
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.64
    HALFSTREET FLOOD WIDTH(FEET) =   23.92
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.41
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.45
  STREET FLOW TRAVEL TIME(MIN.) =   3.74   Tc(MIN.) =  20.35
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.531
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       20.48      0.75      0.60    56
  RESIDENTIAL
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  "3-4 DWELLINGS/ACRE"       A        2.53      0.98      0.60    32
  MOBILE HOME PARK           B       12.12      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.77
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.48
  SUBAREA AREA(ACRES) =   35.13      SUBAREA RUNOFF(CFS) =   36.75
  EFFECTIVE AREA(ACRES) =     72.64    AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.77  AREA-AVERAGED Ap =  0.49
  TOTAL AREA(ACRES) =     72.64        PEAK FLOW RATE(CFS) =      75.61

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.90

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.67   HALFSTREET FLOOD WIDTH(FEET) =  25.58
  FLOW VELOCITY(FEET/SEC.) =  5.65   DEPTH*VELOCITY(FT*FT/SEC.) =   3.77
  LONGEST FLOWPATH FROM NODE  20510.00 TO NODE  20516.00 =  3149.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020516.0 TO NODE LR020517.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1530.00  DOWNSTREAM ELEVATION(FEET) = 1510.00
  STREET LENGTH(FEET) =  1115.01   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.95

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      88.73
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.74
    HALFSTREET FLOOD WIDTH(FEET) =   29.66
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.11
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.78
  STREET FLOW TRAVEL TIME(MIN.) =   3.64   Tc(MIN.) =  23.98
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.387
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       23.04      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       11.30      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.90
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   34.34      SUBAREA RUNOFF(CFS) =   26.17
  EFFECTIVE AREA(ACRES) =    106.98    AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.81  AREA-AVERAGED Ap =  0.52
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  TOTAL AREA(ACRES) =    106.98        PEAK FLOW RATE(CFS) =      92.37

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.90

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.75   HALFSTREET FLOOD WIDTH(FEET) =  30.03
  FLOW VELOCITY(FEET/SEC.) =  5.19   DEPTH*VELOCITY(FT*FT/SEC.) =   3.88
  LONGEST FLOWPATH FROM NODE  20510.00 TO NODE  20517.00 =  4264.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020517.0 TO NODE LR020518.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1510.00  DOWNSTREAM ELEVATION(FEET) = 1489.50
  STREET LENGTH(FEET) =  1340.04   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.99

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     105.30
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.79
    HALFSTREET FLOOD WIDTH(FEET) =   32.23
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.13
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.05
  STREET FLOW TRAVEL TIME(MIN.) =   4.36   Tc(MIN.) =  28.34
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.255
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       37.81      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.14      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.95
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   41.95      SUBAREA RUNOFF(CFS) =   25.79
  EFFECTIVE AREA(ACRES) =    148.93    AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.86  AREA-AVERAGED Ap =  0.55
  TOTAL AREA(ACRES) =    148.93        PEAK FLOW RATE(CFS) =     105.44

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.90

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.79   HALFSTREET FLOOD WIDTH(FEET) =  32.23
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  FLOW VELOCITY(FEET/SEC.) =  5.13   DEPTH*VELOCITY(FT*FT/SEC.) =   4.06
  LONGEST FLOWPATH FROM NODE  20510.00 TO NODE  20518.00 =  5604.37 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020518.0 TO NODE LR020518.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  28.34
  RAINFALL INTENSITY(INCH/HR) =   1.25
  AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.86
  AREA-AVERAGED Ap =  0.55
  EFFECTIVE STREAM AREA(ACRES) =   148.93
  TOTAL STREAM AREA(ACRES) =   148.93
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    105.44

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     44.31  51.15    0.880  0.83( 0.47) 0.56    82.8 LR020500.0
      2    105.44  28.34    1.255  0.86( 0.47) 0.55   148.9 LR020510.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    149.75  28.34    1.255  0.85( 0.47) 0.55   194.8 LR020510.0
      2     99.58  51.15    0.880  0.85( 0.47) 0.55   231.7 LR020500.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    149.75    Tc(MIN.) =    28.34
  EFFECTIVE AREA(ACRES) =   194.79   AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.85  AREA-AVERAGED Ap =  0.55
  TOTAL AREA(ACRES) =    231.70
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20518.00 =  7021.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020518.0 TO NODE LR020519.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1489.50
  DOWNSTREAM NODE ELEVATION(FEET) =  1440.00
  FLOW LENGTH(FEET) =  2632.61   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  27.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.39
  PIPE-FLOW(CFS) =    149.75
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   2.68    Tc(MIN.) =  31.02
```

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*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.188
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
SCHOOL                     A       21.65      0.98      0.60    32
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       A       27.03      0.98      0.60    32
MOBILE HOME PARK           A        8.46      0.98      0.25    32
SCHOOL                     B        7.51      0.75      0.60    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        5.29      0.75      0.60    56
MOBILE HOME PARK           B        2.31      0.75      0.25    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.93
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.55
SUBAREA AREA(ACRES) =   72.25      SUBAREA RUNOFF(CFS) =   44.23
EFFECTIVE AREA(ACRES) =    267.04    AREA-AVERAGED Fm(INCH/HR) =  0.48
AREA-AVERAGED Fp(INCH/HR) =  0.87  AREA-AVERAGED Ap =  0.55
TOTAL AREA(ACRES) =    303.95        PEAK FLOW RATE(CFS) =    170.62

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.90

STREET CROSS-SECTION INFORMATION:
CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 26.00
DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   20.88
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.49
  HALFSTREET FLOOD WIDTH(FEET) =   16.71
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.50
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.72

** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
    1    170.62  31.02    1.188  0.87( 0.48) 0.55   267.0 LR020510.0
    2    104.64  54.14    0.851  0.87( 0.48) 0.55   304.0 LR020500.0
NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) =    170.62  Tc(MIN.) =  31.02
AREA-AVERAGED Fm(INCH/HR) =  0.48  AREA-AVERAGED Fp(INCH/HR) =  0.87
AREA-AVERAGED Ap =  0.55  EFFECTIVE AREA(ACRES) =    267.04
LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20519.00 =  9653.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020519.0 TO NODE LR020520.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1440.00
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DOWNSTREAM NODE ELEVATION(FEET) =  1410.00
FLOW LENGTH(FEET) =  1552.52   MANNING'S N =  0.013

USER SPECIFIED PIPE DIAMETER(INCH) =  66.00    NUMBER OF PIPES =   1
DEPTH OF FLOW IN  66.0 INCH PIPE IS  27.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  18.12
PIPE-FLOW(CFS) =    170.62
*NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
PIPEFLOW TRAVEL TIME(MIN.) =   1.52    Tc(MIN.) =  32.54
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.155
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       A       13.85      0.98      0.60    32
SCHOOL                     A       16.29      0.98      0.60    32
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B       15.89      0.75      0.60    56
PUBLIC PARK                B        9.87      0.75      0.85    56
SCHOOL                     B       12.11      0.75      0.60    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.84
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.64
SUBAREA AREA(ACRES) =   68.01      SUBAREA RUNOFF(CFS) =   37.86
EFFECTIVE AREA(ACRES) =    335.05    AREA-AVERAGED Fm(INCH/HR) =  0.49
AREA-AVERAGED Fp(INCH/HR) =  0.87  AREA-AVERAGED Ap =  0.57
TOTAL AREA(ACRES) =    371.96        PEAK FLOW RATE(CFS) =    200.42

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.90

STREET CROSS-SECTION INFORMATION:
CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 26.00
DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   29.80
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.54
  HALFSTREET FLOOD WIDTH(FEET) =   19.17
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.85
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.09

** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
    1    200.42  32.54    1.155  0.87( 0.49) 0.57   335.0 LR020510.0
    2    121.27  55.87    0.835  0.86( 0.49) 0.57   372.0 LR020500.0
NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) =    200.42  Tc(MIN.) =  32.54
AREA-AVERAGED Fm(INCH/HR) =  0.49  AREA-AVERAGED Fp(INCH/HR) =  0.87
AREA-AVERAGED Ap =  0.57  EFFECTIVE AREA(ACRES) =    335.05
LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20520.00 = 11206.45 FEET.
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****************************************************************************
  FLOW PROCESS FROM NODE LR020520.0 TO NODE LR020536.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1410.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1395.00
  FLOW LENGTH(FEET) =  1041.51   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  72.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  72.0 INCH PIPE IS  31.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.91
  PIPE-FLOW(CFS) =    200.42
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.09    Tc(MIN.) =  33.63
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.132
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        3.22      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.36      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.88
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    5.58      SUBAREA RUNOFF(CFS) =    3.04
  EFFECTIVE AREA(ACRES) =    340.63    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.87  AREA-AVERAGED Ap =  0.57
  TOTAL AREA(ACRES) =    377.54        PEAK FLOW RATE(CFS) =    200.42
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.90

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 26.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  *NOTE: ESTIMATED PEAK FLOW DEFAULTED TO UPSTREAM PEAK FLOW;
         STREET HYDRAULICS NOT COMPUTED*
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20536.00 = 12247.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020536.0 TO NODE LR020536.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
```



```
  TIME OF CONCENTRATION(MIN.) =  33.63
  RAINFALL INTENSITY(INCH/HR) =   1.13
  AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.87
  AREA-AVERAGED Ap =  0.57
  EFFECTIVE STREAM AREA(ACRES) =   340.63
  TOTAL STREAM AREA(ACRES) =   377.54
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    200.42

****************************************************************************
  FLOW PROCESS FROM NODE LR020530.0 TO NODE LR020531.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   818.88
  ELEVATION DATA: UPSTREAM(FEET) =   1480.00  DOWNSTREAM(FEET) =   1470.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.549
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.872
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        5.33      0.98      0.60    32   14.55
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =      6.17
  TOTAL AREA(ACRES) =      5.33   PEAK FLOW RATE(CFS) =      6.17

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.90

****************************************************************************
  FLOW PROCESS FROM NODE LR020531.0 TO NODE LR020532.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1470.00  DOWNSTREAM ELEVATION(FEET) = 1465.00
  STREET LENGTH(FEET) =   771.13   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      15.29
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.49
```

```
   HALFSTREET FLOOD WIDTH(FEET) =   18.00
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.18
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.08
 STREET FLOW TRAVEL TIME(MIN.) =   5.88   Tc(MIN.) =  20.43
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.527
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A       21.08      0.98      0.60    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =   21.08      SUBAREA RUNOFF(CFS) =   17.87
 EFFECTIVE AREA(ACRES) =     26.41    AREA-AVERAGED Fm(INCH/HR) =  0.58
 AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =     26.41        PEAK FLOW RATE(CFS) =      22.38

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.90

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.54   HALFSTREET FLOOD WIDTH(FEET) =  20.15
 FLOW VELOCITY(FEET/SEC.) =  2.53   DEPTH*VELOCITY(FT*FT/SEC.) =   1.37
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  771.1 FT WITH ELEVATION-DROP =   5.0 FT, IS   22.3 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20532.00
 LONGEST FLOWPATH FROM NODE  20530.00 TO NODE  20532.00 =  1590.01 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020532.0 TO NODE LR020533.0 IS CODE =  42
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1465.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1455.00
 FLOW LENGTH(FEET) =  1024.14   MANNING'S N =  0.013

 USER SPECIFIED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
 DEPTH OF FLOW IN  33.0 INCH PIPE IS  15.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   8.46
 PIPE-FLOW(CFS) =     22.38
 *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
 PIPEFLOW TRAVEL TIME(MIN.) =   2.02    Tc(MIN.) =  22.45
 LONGEST FLOWPATH FROM NODE  20530.00 TO NODE  20533.00 =  2614.15 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020533.0 TO NODE LR020533.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  22.45
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.443
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 SCHOOL                     A        1.18      0.98      0.60    32
 RESIDENTIAL
```



```
 "3-4 DWELLINGS/ACRE"       A        1.68      0.98      0.60    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =    2.86      SUBAREA RUNOFF(CFS) =    2.21
 EFFECTIVE AREA(ACRES) =     29.27   AREA-AVERAGED Fm(INCH/HR) =  0.58
 AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =     29.27       PEAK FLOW RATE(CFS) =      22.60

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.90

****************************************************************************
 FLOW PROCESS FROM NODE LR020533.0 TO NODE LR020534.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1455.00  DOWNSTREAM ELEVATION(FEET) = 1430.00
 STREET LENGTH(FEET) =  1374.03   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      34.36
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.53
  HALFSTREET FLOOD WIDTH(FEET) =   19.54
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.11
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.18
 STREET FLOW TRAVEL TIME(MIN.) =   5.58   Tc(MIN.) =  28.03
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.263
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        3.88      0.98      0.60    32
 SCHOOL                     A       34.43      0.98      0.60    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =   38.31      SUBAREA RUNOFF(CFS) =   23.38
 EFFECTIVE AREA(ACRES) =     67.58    AREA-AVERAGED Fm(INCH/HR) =  0.59
 AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =     67.58        PEAK FLOW RATE(CFS) =      41.24

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.90

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.56   HALFSTREET FLOOD WIDTH(FEET) =  20.88
```

```
  FLOW VELOCITY(FEET/SEC.) =  4.36   DEPTH*VELOCITY(FT*FT/SEC.) =   2.43
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.96
  PIPE-FLOW(CFS) =     22.60
  PIPEFLOW TRAVEL TIME(MIN.) =   2.30    Tc(MIN.) =  24.75
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.361
  SUBAREA AREA(ACRES) =   38.31      SUBAREA RUNOFF(CFS) =   26.75
  TOTAL AREA(ACRES) =     67.58        PEAK FLOW RATE(CFS) =     47.19

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.90
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   24.59
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.49
    HALFSTREET FLOOD WIDTH(FEET) =   18.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.60
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.76
  LONGEST FLOWPATH FROM NODE  20530.00 TO NODE  20534.00 =  3988.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020534.0 TO NODE LR020535.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1430.00  DOWNSTREAM ELEVATION(FEET) = 1396.00
  STREET LENGTH(FEET) =  1929.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      56.61
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.61
    HALFSTREET FLOOD WIDTH(FEET) =   23.63
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.76
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.91
  STREET FLOW TRAVEL TIME(MIN.) =   6.76   Tc(MIN.) =  31.51
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.177
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       35.20      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
```



```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   35.20      SUBAREA RUNOFF(CFS) =   18.77
  EFFECTIVE AREA(ACRES) =    102.78    AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =    102.78        PEAK FLOW RATE(CFS) =      54.79

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.90

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.61   HALFSTREET FLOOD WIDTH(FEET) =  23.32
  FLOW VELOCITY(FEET/SEC.) =  4.72   DEPTH*VELOCITY(FT*FT/SEC.) =   2.86
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.80
  PIPE-FLOW(CFS) =     27.68
  PIPEFLOW TRAVEL TIME(MIN.) =   3.65    Tc(MIN.) =  28.40
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.253
  SUBAREA AREA(ACRES) =   35.20      SUBAREA RUNOFF(CFS) =   21.16
  TOTAL AREA(ACRES) =    102.78        PEAK FLOW RATE(CFS) =     61.79

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.90
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   34.11
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.53
    HALFSTREET FLOOD WIDTH(FEET) =   19.60
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.05
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.16
  LONGEST FLOWPATH FROM NODE  20530.00 TO NODE  20535.00 =  5917.68 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020535.0 TO NODE LR020536.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1396.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1395.00
  FLOW LENGTH(FEET) =  1300.63   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  72.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  72.0 INCH PIPE IS  37.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.21
  PIPE-FLOW(CFS) =     61.79
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   5.48    Tc(MIN.) =  33.89
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.127
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       12.27      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.40      0.75      0.60    56
```

```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   12.67      SUBAREA RUNOFF(CFS) =    6.23
  EFFECTIVE AREA(ACRES) =    115.45    AREA-AVERAGED Fm(INCH/HR) =  0.58
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =    115.45        PEAK FLOW RATE(CFS) =     61.79
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.90

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 26.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  *NOTE: ESTIMATED PEAK FLOW DEFAULTED TO UPSTREAM PEAK FLOW;
         STREET HYDRAULICS NOT COMPUTED*
  LONGEST FLOWPATH FROM NODE  20530.00 TO NODE  20536.00 =  7218.31 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020536.0 TO NODE LR020536.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  33.89
  RAINFALL INTENSITY(INCH/HR) =   1.13
  AREA-AVERAGED Fm(INCH/HR) =  0.58
  AREA-AVERAGED Fp(INCH/HR) =  0.97
  AREA-AVERAGED Ap =  0.60
  EFFECTIVE STREAM AREA(ACRES) =   115.45
  TOTAL STREAM AREA(ACRES) =   115.45
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     61.79

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    200.42  33.63    1.132  0.87( 0.49) 0.57   340.6 LR020510.0
      1    121.33  57.12    0.824  0.86( 0.49) 0.57   377.5 LR020500.0
      2     61.79  33.89    1.127  0.97( 0.58) 0.60   115.4 LR020530.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    262.21  33.63    1.132  0.89( 0.51) 0.58   455.2 LR020510.0
      2    261.35  33.89    1.127  0.89( 0.51) 0.58   456.5 LR020530.0
```



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      3    158.87  57.12    0.824  0.89( 0.51) 0.57   493.0 LR020500.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    262.21    Tc(MIN.) =    33.63
  EFFECTIVE AREA(ACRES) =   455.21   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.89  AREA-AVERAGED Ap =  0.58
  TOTAL AREA(ACRES) =    492.99
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20536.00 = 12247.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020536.0 TO NODE LR020537.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1395.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1394.50
  FLOW LENGTH(FEET) =   877.02   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) = 144.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN 144.0 INCH PIPE IS  64.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.39
  PIPE-FLOW(CFS) =    262.21
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   2.88    Tc(MIN.) =  36.51
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.078
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       13.40      0.75      0.60    56
  SCHOOL                     B        8.54      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   21.94      SUBAREA RUNOFF(CFS) =   12.42
  EFFECTIVE AREA(ACRES) =    477.15    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.89  AREA-AVERAGED Ap =  0.58
  TOTAL AREA(ACRES) =    514.93        PEAK FLOW RATE(CFS) =    262.21
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.90

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 26.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  *NOTE: ESTIMATED PEAK FLOW DEFAULTED TO UPSTREAM PEAK FLOW;
         STREET HYDRAULICS NOT COMPUTED*
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20537.00 = 13124.98 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR020537.0 TO NODE LR020538.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1394.50  DOWNSTREAM(FEET) =  1380.00
  FLOW LENGTH(FEET) =   851.83   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   6.00   GIVEN BOX HEIGHT(FEET) =   4.00
  FLOWDEPTH IN BOX IS  2.55 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  17.13
  BOX-FLOW(CFS) =    262.21
  BOX-FLOW TRAVEL TIME(MIN.) =   0.83    Tc(MIN.) =  37.34
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20538.00 = 13976.81 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020538.0 TO NODE LR020538.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  37.34
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.063
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        6.57      0.75      0.50    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        9.02      0.75      0.60    56
  COMMERCIAL                 B        6.87      0.75      0.10    56
  PUBLIC PARK                B        0.38      0.75      0.85    56
  SCHOOL                     B        0.45      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.43
  SUBAREA AREA(ACRES) =   23.29      SUBAREA RUNOFF(CFS) =   15.57
  EFFECTIVE AREA(ACRES) =    500.44   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.88  AREA-AVERAGED Ap =  0.57
  TOTAL AREA(ACRES) =    538.22       PEAK FLOW RATE(CFS) =     262.21
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.90

****************************************************************************
  FLOW PROCESS FROM NODE LR020538.0 TO NODE LR020539.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1380.00  DOWNSTREAM(FEET) =  1366.00
  FLOW LENGTH(FEET) =  1281.91   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   7.00   GIVEN BOX HEIGHT(FEET) =   4.00
  FLOWDEPTH IN BOX IS  2.59 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  14.46
  BOX-FLOW(CFS) =    262.21
  BOX-FLOW TRAVEL TIME(MIN.) =   1.48    Tc(MIN.) =  38.82
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20539.00 = 15258.72 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020539.0 TO NODE LR020539.0 IS CODE =  81
```



```
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  38.82
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.039
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.02      0.75      0.60    56
  COMMERCIAL                 B        3.73      0.75      0.10    56
  PUBLIC PARK                B        1.42      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.31
  SUBAREA AREA(ACRES) =    5.17      SUBAREA RUNOFF(CFS) =    3.76
  EFFECTIVE AREA(ACRES) =    505.61   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.88  AREA-AVERAGED Ap =  0.57
  TOTAL AREA(ACRES) =    543.39       PEAK FLOW RATE(CFS) =     262.21
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.90

****************************************************************************
  FLOW PROCESS FROM NODE LR020539.0 TO NODE LR020539.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020454.0 TO NODE LR020454.0 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20454.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1986.45    Tc(MIN.) =  57.34
  AREA-AVERAGED Fm(INCH/HR) =  0.56    Ybar = 0.63
  TOTAL AREA(ACRES) =    5435.77
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20454.00 = 33620.61 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020454.0 TO NODE LR020454.0 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1986.45    Tc(MIN.) =  57.34
  AREA-AVERAGED Fm(INCH/HR) =  0.56    Ybar = 0.63
  TOTAL AREA(ACRES) =    5435.77
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20454.00 = 33620.61 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020454.0 TO NODE LR020454.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR020454.0 TO NODE LR020539.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1395.00  DOWNSTREAM(FEET) =   1366.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1483.64   CHANNEL SLOPE =  0.0195
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   6.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   1986.45
  FLOW VELOCITY(FEET/SEC.) =  26.19   FLOW DEPTH(FEET) =   3.85
  TRAVEL TIME(MIN.) =   0.94   Tc(MIN.) =  58.28
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20539.00 = 35104.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020539.0 TO NODE LR020539.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  58.28
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.814
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        2.13      0.75      0.85    56
  SCHOOL                     B        8.75      0.75      0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.67      0.75      0.60    56
  COMMERCIAL                 B        0.11      0.75      0.10    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.07      0.75      0.50    56
  MOBILE HOME PARK           B        4.39      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.54
  SUBAREA AREA(ACRES) =   19.12
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.62;1H= 0.82;3H= 1.47;6H= 2.14;24H= 4.49
  S-GRAPH: VALLEY(DEV.)= 50.2%;VALLEY(UNDEV.)/DESERT= 49.8%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.97; LAG(HR) = 0.78; Fm(INCH/HR) = 0.56; Ybar = 0.63
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.77; 30M = 0.77; 1HR = 0.77;
  3HR = 0.96; 6HR = 0.98; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   5454.89
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20539.00 = 35104.25 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0351; Lca/L=0.4,n=.0314; Lca/L=0.5,n=.0289;Lca/L=0.6,n=.0270
  TIME OF PEAK FLOW(HR) = 16.83  RUNOFF VOLUME(AF) =     800.37
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1916.31
  TOTAL AREA(ACRES) =   5454.89       PEAK FLOW RATE(CFS) =    1986.45
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.90

****************************************************************************
```



```
  FLOW PROCESS FROM NODE LR020539.0 TO NODE LR020539.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     1986.45    Tc(MIN.) =  58.28
  AREA-AVERAGED Fm(INCH/HR) =  0.56    Ybar = 0.63
  TOTAL AREA(ACRES) =    5454.89
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20539.00 = 35104.25 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    262.21  38.68    1.041  0.88( 0.50) 0.57   505.6 LR020510.0
      2    261.35  38.82    1.039  0.88( 0.50) 0.57   506.9 LR020530.0
      3    165.20  62.65    0.780  0.88( 0.50) 0.57   543.4 LR020500.0
  LONGEST FLOWPATH FROM NODE  20500.00 TO NODE  20539.00 = 15258.72 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.62;1H= 0.81;3H= 1.46;6H= 2.12;24H= 4.44
  S-GRAPH: VALLEY(DEV.)= 54.6%;VALLEY(UNDEV.)/DESERT= 45.4%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.97; LAG(HR) = 0.78; Fm(INCH/HR) = 0.55; Ybar = 0.62
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.76; 30M = 0.76; 1HR = 0.76;
  3HR = 0.96; 6HR = 0.98; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   5998.28
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20539.00 = 35104.25 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0351; Lca/L=0.4,n=.0314; Lca/L=0.5,n=.0289;Lca/L=0.6,n=.0270
  TIME OF PEAK FLOW(HR) = 16.83  RUNOFF VOLUME(AF) =     876.72
  PEAK FLOW RATE(CFS) =    2092.97

****************************************************************************
  FLOW PROCESS FROM NODE LR020539.0 TO NODE LR020539.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020539.0 TO NODE LR020539.0 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20539.DNA
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =   5998.28  TC(MIN.) =     58.28
  AREA-AVERAGED Fm(INCH/HR)=  0.55   Ybar =  0.62
  PEAK FLOW RATE(CFS)   =   2092.97
============================================================================
============================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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                          Analysis prepared by:

                          San Bernardino County
                    Transportation/ Flood Control Department

                          Water Resources Division

 ************************ DESCRIPTION OF STUDY *************************
* LR0206ZZ                                                             *
* 10-Year Storm                                                        *
*                                                                      *
 ************************************************************************

  FILE NAME: LR0206ZZ.Z10
  TIME/DATE OF STUDY: 09:58 02/22/2006
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 0.8000

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
```



```
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


************************************************************************
  FLOW PROCESS FROM NODE LR020600.0 TO NODE LR020601.0 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   667.14
  ELEVATION DATA: UPSTREAM(FEET) =   2277.00  DOWNSTREAM(FEET) =   2175.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.086
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.663
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.56      0.75       0.60    56    8.09
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.26      0.75       0.70    56    8.60
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.61       1.00    66   13.86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.71
  SUBAREA RUNOFF(CFS) =     11.80
  TOTAL AREA(ACRES) =      6.12   PEAK FLOW RATE(CFS) =     11.80

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

************************************************************************
  FLOW PROCESS FROM NODE LR020601.0 TO NODE LR020602.0 IS CODE =  54
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2175.00  DOWNSTREAM(FEET) =   2160.00
```

```
  CHANNEL LENGTH THRU SUBAREA(FEET) =   204.73   CHANNEL SLOPE =  0.0733
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     11.80
  FLOW VELOCITY(FEET/SEC.) =   3.45   FLOW DEPTH(FEET) =   0.48
  TRAVEL TIME(MIN.) =   0.99   Tc(MIN.) =   9.08
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20602.00 =   871.87 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020602.0 TO NODE LR020602.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =   9.08
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.485
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        0.68      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.18      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    0.86      SUBAREA RUNOFF(CFS) =    1.53
  EFFECTIVE AREA(ACRES) =      6.98   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =      6.98       PEAK FLOW RATE(CFS) =      12.34

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

****************************************************************************
  FLOW PROCESS FROM NODE LR020602.0 TO NODE LR020603.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2160.00  DOWNSTREAM(FEET) =   2145.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   268.43   CHANNEL SLOPE =  0.0559
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     12.34
  FLOW VELOCITY(FEET/SEC.) =   3.11   FLOW DEPTH(FEET) =   0.51
  TRAVEL TIME(MIN.) =   1.44   Tc(MIN.) =  10.51
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20603.00 =  1140.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020603.0 TO NODE LR020603.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  10.51
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.275
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
```



```
  "2 DWELLINGS/ACRE"         B        1.70      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =    1.70      SUBAREA RUNOFF(CFS) =    2.68
  EFFECTIVE AREA(ACRES) =      8.68   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =      8.68       PEAK FLOW RATE(CFS) =      13.71

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

****************************************************************************
  FLOW PROCESS FROM NODE LR020603.0 TO NODE LR020604.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2145.00  DOWNSTREAM(FEET) =   2135.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   214.72   CHANNEL SLOPE =  0.0466
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     13.71
  FLOW VELOCITY(FEET/SEC.) =   3.00   FLOW DEPTH(FEET) =   0.55
  TRAVEL TIME(MIN.) =   1.19   Tc(MIN.) =  11.71
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20604.00 =  1355.02 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020604.0 TO NODE LR020604.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  11.71
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.133
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.97      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.08      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =    2.05      SUBAREA RUNOFF(CFS) =    2.97
  EFFECTIVE AREA(ACRES) =     10.73   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     10.73       PEAK FLOW RATE(CFS) =      15.57

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

****************************************************************************
  FLOW PROCESS FROM NODE LR020604.0 TO NODE LR020605.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2135.00  DOWNSTREAM(FEET) =   2125.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   174.03   CHANNEL SLOPE =  0.0575
```

```
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     15.57
  FLOW VELOCITY(FEET/SEC.) =   3.38   FLOW DEPTH(FEET) =   0.55
  TRAVEL TIME(MIN.) =   0.86   Tc(MIN.) =  12.56
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20605.00 =  1529.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020605.0 TO NODE LR020605.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  12.56
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.044
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        2.05      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.10      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =    2.15      SUBAREA RUNOFF(CFS) =    2.95
  EFFECTIVE AREA(ACRES) =     12.88   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     12.88       PEAK FLOW RATE(CFS) =      17.66

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

****************************************************************************
  FLOW PROCESS FROM NODE LR020605.0 TO NODE LR020606.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2125.00  DOWNSTREAM(FEET) =   2115.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   235.99   CHANNEL SLOPE =  0.0424
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     17.66
  FLOW VELOCITY(FEET/SEC.) =   3.11   FLOW DEPTH(FEET) =   0.62
  TRAVEL TIME(MIN.) =   1.26   Tc(MIN.) =  13.83
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20606.00 =  1765.04 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020606.0 TO NODE LR020606.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  13.83
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.930
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        3.11      0.75      0.70    56
```



```
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.22      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    3.33      SUBAREA RUNOFF(CFS) =    4.23
  EFFECTIVE AREA(ACRES) =     16.21   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     16.21       PEAK FLOW RATE(CFS) =      20.57

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

****************************************************************************
  FLOW PROCESS FROM NODE LR020606.0 TO NODE LR020607.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2115.00  DOWNSTREAM(FEET) =   2092.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   277.39   CHANNEL SLOPE =  0.0829
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     20.57
  FLOW VELOCITY(FEET/SEC.) =   4.15   FLOW DEPTH(FEET) =   0.58
  TRAVEL TIME(MIN.) =   1.12   Tc(MIN.) =  14.94
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20607.00 =  2042.43 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020607.0 TO NODE LR020607.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  14.94
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.842
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        0.41      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.29      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.66
  SUBAREA AREA(ACRES) =    0.70      SUBAREA RUNOFF(CFS) =    0.85
  EFFECTIVE AREA(ACRES) =     16.91   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     16.91       PEAK FLOW RATE(CFS) =      20.57
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

****************************************************************************
  FLOW PROCESS FROM NODE LR020607.0 TO NODE LR020608.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
```

```
  ELEVATION DATA: UPSTREAM(FEET) =   2092.00  DOWNSTREAM(FEET) =   2080.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   203.75   CHANNEL SLOPE =  0.0589
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     20.57
  FLOW VELOCITY(FEET/SEC.) =   3.65   FLOW DEPTH(FEET) =   0.61
  TRAVEL TIME(MIN.) =   0.93   Tc(MIN.) =  15.87
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20608.00 =  2246.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020608.0 TO NODE LR020608.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  15.87
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.776
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.94      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.31      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.66
  SUBAREA AREA(ACRES) =    5.25      SUBAREA RUNOFF(CFS) =    6.08
  EFFECTIVE AREA(ACRES) =     22.16   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     22.16       PEAK FLOW RATE(CFS) =      25.21

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

****************************************************************************
  FLOW PROCESS FROM NODE LR020608.0 TO NODE LR020609.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2080.00  DOWNSTREAM(FEET) =   2065.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   358.70   CHANNEL SLOPE =  0.0418
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     25.21
  FLOW VELOCITY(FEET/SEC.) =   3.37   FLOW DEPTH(FEET) =   0.71
  TRAVEL TIME(MIN.) =   1.78   Tc(MIN.) =  17.65
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20609.00 =  2604.88 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020609.0 TO NODE LR020609.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.65
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.667
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```



```
  COMMERCIAL                 B        5.77      0.75      0.10    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        7.52      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.91      0.75      0.60    56
  MOBILE HOME PARK           B        1.23      0.75      0.25    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.92      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.46
  SUBAREA AREA(ACRES) =   16.35      SUBAREA RUNOFF(CFS) =   19.47
  EFFECTIVE AREA(ACRES) =     38.51   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.59
  TOTAL AREA(ACRES) =     38.51       PEAK FLOW RATE(CFS) =      42.50

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

****************************************************************************
  FLOW PROCESS FROM NODE LR020609.0 TO NODE LR020610.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2065.00  DOWNSTREAM ELEVATION(FEET) = 2060.00
  STREET LENGTH(FEET) =   360.92   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      45.82
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.60
    HALFSTREET FLOOD WIDTH(FEET) =   22.84
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.11
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.45
  STREET FLOW TRAVEL TIME(MIN.) =   1.47   Tc(MIN.) =  19.12
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.589
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        1.29      0.75      0.50    56
  COMMERCIAL                 B        2.79      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.24      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        0.95      0.75      0.70    56
  MOBILE HOME PARK           B        0.22      0.75      0.25    56
```

```
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.33
 SUBAREA AREA(ACRES) =    5.49      SUBAREA RUNOFF(CFS) =    6.65
 EFFECTIVE AREA(ACRES) =     44.00    AREA-AVERAGED Fm(INCH/HR) =  0.42
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.56
 TOTAL AREA(ACRES) =     44.00        PEAK FLOW RATE(CFS) =      46.44

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.60   HALFSTREET FLOOD WIDTH(FEET) =  22.96
 FLOW VELOCITY(FEET/SEC.) =  4.12   DEPTH*VELOCITY(FT*FT/SEC.) =   2.47
 LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20610.00 =  2965.80 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020610.0 TO NODE LR020611.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2060.00  DOWNSTREAM ELEVATION(FEET) = 2057.00
 STREET LENGTH(FEET) =   352.25   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      54.89
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.68
   HALFSTREET FLOOD WIDTH(FEET) =   26.80
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.63
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.46
 STREET FLOW TRAVEL TIME(MIN.) =   1.62   Tc(MIN.) =  20.73
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.514
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        0.30      0.75      0.50    56
 COMMERCIAL                 B        1.71      0.75      0.10    56
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"      B        1.66      0.75      0.40    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.04      0.75      0.60    56
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B       12.96      0.75      0.70    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
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 SUBAREA AREA(ACRES) =   17.67      SUBAREA RUNOFF(CFS) =   16.88
 EFFECTIVE AREA(ACRES) =     61.67    AREA-AVERAGED Fm(INCH/HR) =  0.43
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.57
 TOTAL AREA(ACRES) =     61.67        PEAK FLOW RATE(CFS) =      60.34

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.70   HALFSTREET FLOOD WIDTH(FEET) =  27.78
 FLOW VELOCITY(FEET/SEC.) =  3.73   DEPTH*VELOCITY(FT*FT/SEC.) =   2.60
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  352.2 FT WITH ELEVATION-DROP =   3.0 FT, IS   34.7 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20611.00
 LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20611.00 =  3318.05 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020611.0 TO NODE LR020612.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2057.00  DOWNSTREAM ELEVATION(FEET) = 2054.00
 STREET LENGTH(FEET) =   398.28   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      80.39
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.78
   HALFSTREET FLOOD WIDTH(FEET) =   31.87
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.82
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.97
 STREET FLOW TRAVEL TIME(MIN.) =   1.74   Tc(MIN.) =  22.47
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.442
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        0.48      0.75      0.50    56
 COMMERCIAL                 B        2.00      0.75      0.10    56
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B       37.07      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        6.98      0.75      0.60    56
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"      B        0.01      0.75      0.40    56
 NATURAL FAIR COVER
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"OPEN BRUSH"                B        0.36      0.61      1.00    66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.66
SUBAREA AREA(ACRES) =   46.90      SUBAREA RUNOFF(CFS) =   40.09
EFFECTIVE AREA(ACRES) =    108.57    AREA-AVERAGED Fm(INCH/HR) =  0.46
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.61
TOTAL AREA(ACRES) =    108.57        PEAK FLOW RATE(CFS) =      96.47

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.82   HALFSTREET FLOOD WIDTH(FEET) =  34.25
FLOW VELOCITY(FEET/SEC.) =  3.99   DEPTH*VELOCITY(FT*FT/SEC.) =   3.29
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
       AND L =  398.3 FT WITH ELEVATION-DROP =   3.0 FT, IS   85.6 CFS,
       WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20612.00
LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20612.00 =  3716.33 FEET.

****************************************************************************
FLOW PROCESS FROM NODE LR020612.0 TO NODE LR020613.0 IS CODE =  63
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 2054.00  DOWNSTREAM ELEVATION(FEET) = 2050.00
STREET LENGTH(FEET) =   366.37   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      98.62
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.78
  HALFSTREET FLOOD WIDTH(FEET) =   32.11
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.62
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.61
STREET FLOW TRAVEL TIME(MIN.) =   1.32   Tc(MIN.) =  23.79
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.394
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"5-7 DWELLINGS/ACRE"       B        0.53      0.75      0.50    56
COMMERCIAL                 B        2.00      0.75      0.10    56
RESIDENTIAL
"2 DWELLINGS/ACRE"         B        1.58      0.75      0.70    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        0.26      0.75      0.60    56
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SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
SUBAREA AREA(ACRES) =    4.37      SUBAREA RUNOFF(CFS) =    4.32
EFFECTIVE AREA(ACRES) =    112.94    AREA-AVERAGED Fm(INCH/HR) =  0.45
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
TOTAL AREA(ACRES) =    112.94        PEAK FLOW RATE(CFS) =      96.47
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.78   HALFSTREET FLOOD WIDTH(FEET) =  31.81
FLOW VELOCITY(FEET/SEC.) =  4.60   DEPTH*VELOCITY(FT*FT/SEC.) =   3.57
LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20613.00 =  4082.70 FEET.

****************************************************************************
FLOW PROCESS FROM NODE LR020613.0 TO NODE LR020614.0 IS CODE =  63
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 2050.00  DOWNSTREAM ELEVATION(FEET) = 2047.00
STREET LENGTH(FEET) =   389.73   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      99.09
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.83
  HALFSTREET FLOOD WIDTH(FEET) =   34.43
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.05
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.36
STREET FLOW TRAVEL TIME(MIN.) =   1.60   Tc(MIN.) =  25.39
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.340
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"5-7 DWELLINGS/ACRE"       B        0.63      0.75      0.50    56
COMMERCIAL                 B        2.36      0.75      0.10    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        0.24      0.75      0.60    56
RESIDENTIAL
"2 DWELLINGS/ACRE"         B        2.47      0.75      0.70    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.43
SUBAREA AREA(ACRES) =    5.70      SUBAREA RUNOFF(CFS) =    5.24
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  EFFECTIVE AREA(ACRES) =    118.64    AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.59
  TOTAL AREA(ACRES) =    118.64        PEAK FLOW RATE(CFS) =      96.47
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.82   HALFSTREET FLOOD WIDTH(FEET) =  34.07
  FLOW VELOCITY(FEET/SEC.) =  4.03   DEPTH*VELOCITY(FT*FT/SEC.) =   3.31
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20614.00 =  4472.43 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020614.0 TO NODE LR020615.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2047.00  DOWNSTREAM ELEVATION(FEET) = 2044.00
  STREET LENGTH(FEET) =   324.66   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      98.83
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.80
    HALFSTREET FLOOD WIDTH(FEET) =   33.21
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.34
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.49
  STREET FLOW TRAVEL TIME(MIN.) =   1.25   Tc(MIN.) =  26.64
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.302
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.61      0.75      0.50    56
  COMMERCIAL                 B        1.87      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.40      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.63      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.47
  SUBAREA AREA(ACRES) =    5.51      SUBAREA RUNOFF(CFS) =    4.73
  EFFECTIVE AREA(ACRES) =    124.15    AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.59
  TOTAL AREA(ACRES) =    124.15        PEAK FLOW RATE(CFS) =      96.51
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  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.80   HALFSTREET FLOOD WIDTH(FEET) =  32.91
  FLOW VELOCITY(FEET/SEC.) =  4.31   DEPTH*VELOCITY(FT*FT/SEC.) =   3.44
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20615.00 =  4797.09 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020615.0 TO NODE LR020616.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2044.00  DOWNSTREAM ELEVATION(FEET) = 2042.00
  STREET LENGTH(FEET) =   320.06   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     100.97
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.86
    HALFSTREET FLOOD WIDTH(FEET) =   36.14
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.76
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.24
  STREET FLOW TRAVEL TIME(MIN.) =   1.42   Tc(MIN.) =  28.06
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.262
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        2.51      0.75      0.50    56
  COMMERCIAL                 B        0.24      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.23      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        7.57      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
  SUBAREA AREA(ACRES) =   12.55      SUBAREA RUNOFF(CFS) =    8.93
  EFFECTIVE AREA(ACRES) =    136.70    AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.59
  TOTAL AREA(ACRES) =    136.70        PEAK FLOW RATE(CFS) =     100.97

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02
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  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.86   HALFSTREET FLOOD WIDTH(FEET) =  36.14
  FLOW VELOCITY(FEET/SEC.) =  3.76   DEPTH*VELOCITY(FT*FT/SEC.) =   3.24
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  320.1 FT WITH ELEVATION-DROP =   2.0 FT, IS   24.0 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20616.00
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20616.00 =  5117.15 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020616.0 TO NODE LR020648.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2042.00  DOWNSTREAM ELEVATION(FEET) = 2025.00
  STREET LENGTH(FEET) =   522.92   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.79

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     104.02
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.67
    HALFSTREET FLOOD WIDTH(FEET) =   26.50
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.04
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.72
  STREET FLOW TRAVEL TIME(MIN.) =   1.24   Tc(MIN.) =  29.30
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.230
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        2.43      0.75      0.50    56
  COMMERCIAL                 B        2.02      0.75      0.10    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        3.04      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.27      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.48
  SUBAREA AREA(ACRES) =    7.76      SUBAREA RUNOFF(CFS) =    6.09
  EFFECTIVE AREA(ACRES) =    144.46    AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.58
  TOTAL AREA(ACRES) =    144.46        PEAK FLOW RATE(CFS) =     103.10

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

  END OF SUBAREA STREET FLOW HYDRAULICS:
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  DEPTH(FEET) = 0.67   HALFSTREET FLOOD WIDTH(FEET) =  26.38
  FLOW VELOCITY(FEET/SEC.) =  7.04   DEPTH*VELOCITY(FT*FT/SEC.) =   4.70
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20648.00 =  5640.07 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020648.0 TO NODE LR020648.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020620.0 TO NODE LR020621.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   866.66
  ELEVATION DATA: UPSTREAM(FEET) =   2190.00  DOWNSTREAM(FEET) =   2160.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.083
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.093
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       11.35      0.61      1.00    66   20.71
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.89      0.75      0.60    56   12.08
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.62
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.97
  SUBAREA RUNOFF(CFS) =     16.42
  TOTAL AREA(ACRES) =     12.24   PEAK FLOW RATE(CFS) =     16.42

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

****************************************************************************
  FLOW PROCESS FROM NODE LR020621.0 TO NODE LR020622.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2160.00  DOWNSTREAM(FEET) =   2150.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   356.13   CHANNEL SLOPE =  0.0281
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  35.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     16.42
  FLOW VELOCITY(FEET/SEC.) =   2.12   FLOW DEPTH(FEET) =   0.47
  TRAVEL TIME(MIN.) =   2.80   Tc(MIN.) =  14.88
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20622.00 =  1222.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020622.0 TO NODE LR020622.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  14.88
```

```
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.847
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"                 B        3.73      0.61      1.00    66
 RESIDENTIAL
 "2 DWELLINGS/ACRE"           B        1.57      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"         B        1.62      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.66
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.84
 SUBAREA AREA(ACRES) =     6.92      SUBAREA RUNOFF(CFS) =     8.05
 EFFECTIVE AREA(ACRES) =     19.16   AREA-AVERAGED Fm(INCH/HR) =  0.58
 AREA-AVERAGED Fp(INCH/HR) =  0.63  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     19.16       PEAK FLOW RATE(CFS) =      21.76

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

****************************************************************************
 FLOW PROCESS FROM NODE LR020622.0 TO NODE LR020623.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   2150.00  DOWNSTREAM(FEET) =   2145.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   158.50   CHANNEL SLOPE =  0.0315
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  35.000
 MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
 CHANNEL FLOW THRU SUBAREA(CFS) =     21.76
 FLOW VELOCITY(FEET/SEC.) =   2.35   FLOW DEPTH(FEET) =   0.51
 TRAVEL TIME(MIN.) =   1.12   Tc(MIN.) =  16.00
 LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20623.00 =  1381.29 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020623.0 TO NODE LR020623.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  16.00
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.768
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"           B        3.20      0.75      0.70    56
 NATURAL FAIR COVER
 "OPEN BRUSH"                 B        0.56      0.61      1.00    66
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"        B        1.58      0.75      0.40    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"         B        2.74      0.75      0.60    56
 RESIDENTIAL
 ".4 DWELLING/ACRE"           B        0.08      0.75      0.90    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.73
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
 SUBAREA AREA(ACRES) =     8.16      SUBAREA RUNOFF(CFS) =     9.59
```



```
 EFFECTIVE AREA(ACRES) =     27.32   AREA-AVERAGED Fm(INCH/HR) =  0.55
 AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.84
 TOTAL AREA(ACRES) =     27.32       PEAK FLOW RATE(CFS) =      29.98

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

****************************************************************************
 FLOW PROCESS FROM NODE LR020623.0 TO NODE LR020624.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   2145.00  DOWNSTREAM(FEET) =   2140.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   251.47   CHANNEL SLOPE =  0.0199
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  35.000
 MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
 CHANNEL FLOW THRU SUBAREA(CFS) =     29.98
 FLOW VELOCITY(FEET/SEC.) =   2.16   FLOW DEPTH(FEET) =   0.63
 TRAVEL TIME(MIN.) =   1.94   Tc(MIN.) =  17.95
 LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20624.00 =  1632.76 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020624.0 TO NODE LR020624.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  17.95
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.650
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"        B        4.38      0.75      0.40    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"         B        5.30      0.75      0.60    56
 RESIDENTIAL
 ".4 DWELLING/ACRE"           B        1.08      0.75      0.90    56
 CONDOMINIUMS                 B        0.14      0.75      0.35    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.55
 SUBAREA AREA(ACRES) =    10.90      SUBAREA RUNOFF(CFS) =    12.18
 EFFECTIVE AREA(ACRES) =     38.22   AREA-AVERAGED Fm(INCH/HR) =  0.51
 AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.75
 TOTAL AREA(ACRES) =     38.22       PEAK FLOW RATE(CFS) =      39.28

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

****************************************************************************
 FLOW PROCESS FROM NODE LR020624.0 TO NODE LR020625.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   2140.00  DOWNSTREAM(FEET) =   2130.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   332.21   CHANNEL SLOPE =  0.0301
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  35.000
```

```
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     39.28
  FLOW VELOCITY(FEET/SEC.) =   2.69   FLOW DEPTH(FEET) =   0.65
  TRAVEL TIME(MIN.) =   2.06   Tc(MIN.) =  20.00
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20625.00 =  1964.97 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020625.0 TO NODE LR020625.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  20.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.546
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.47      0.75      0.60    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.16      0.75      0.40    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.59
  SUBAREA AREA(ACRES) =    5.63      SUBAREA RUNOFF(CFS) =    5.58
  EFFECTIVE AREA(ACRES) =     43.85   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =     43.85       PEAK FLOW RATE(CFS) =      41.28

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

****************************************************************************
  FLOW PROCESS FROM NODE LR020625.0 TO NODE LR020626.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2130.00  DOWNSTREAM ELEVATION(FEET) = 2116.00
  STREET LENGTH(FEET) =   342.35   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.74

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      43.71
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.51
    HALFSTREET FLOOD WIDTH(FEET) =   18.50
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.77
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.94
  STREET FLOW TRAVEL TIME(MIN.) =   0.99   Tc(MIN.) =  20.99
```



```
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.502
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.09      0.75      0.40    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.68      0.75      0.60    56
  MOBILE HOME PARK           B        0.24      0.75      0.25    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.04      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.58
  SUBAREA AREA(ACRES) =    5.05      SUBAREA RUNOFF(CFS) =    4.85
  EFFECTIVE AREA(ACRES) =     48.90    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.69  AREA-AVERAGED Ap =  0.72
  TOTAL AREA(ACRES) =     48.90        PEAK FLOW RATE(CFS) =      44.39

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.51   HALFSTREET FLOOD WIDTH(FEET) =  18.56
  FLOW VELOCITY(FEET/SEC.) =  5.82   DEPTH*VELOCITY(FT*FT/SEC.) =   2.98
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20626.00 =  2307.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020626.0 TO NODE LR020627.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2116.00  DOWNSTREAM ELEVATION(FEET) = 2110.00
  STREET LENGTH(FEET) =   424.67   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      46.13
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.60
    HALFSTREET FLOOD WIDTH(FEET) =   22.78
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.15
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.47
  STREET FLOW TRAVEL TIME(MIN.) =   1.70   Tc(MIN.) =  22.70
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.434
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.03      0.75      0.40    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.50      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.53      0.75      0.90    56
  MOBILE HOME PARK           B        0.07      0.75      0.25    56
  COMMERCIAL                 B        0.09      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    4.22      SUBAREA RUNOFF(CFS) =    3.48
  EFFECTIVE AREA(ACRES) =     53.12    AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.69  AREA-AVERAGED Ap =  0.72
  TOTAL AREA(ACRES) =     53.12        PEAK FLOW RATE(CFS) =      44.85

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.59   HALFSTREET FLOOD WIDTH(FEET) =  22.53
  FLOW VELOCITY(FEET/SEC.) =  4.12   DEPTH*VELOCITY(FT*FT/SEC.) =   2.43
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20627.00 =  2731.99 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020627.0 TO NODE LR020628.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2110.00  DOWNSTREAM ELEVATION(FEET) = 2108.00
  STREET LENGTH(FEET) =   486.92   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      47.17
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.72
    HALFSTREET FLOOD WIDTH(FEET) =   29.12
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.67
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.93
  STREET FLOW TRAVEL TIME(MIN.) =   3.04   Tc(MIN.) =  25.74
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.329
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        1.07      0.75      0.40    56
  RESIDENTIAL
```



```
  ".4 DWELLING/ACRE"         B        2.66      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.65      0.75      0.60    56
  COMMERCIAL                 B        0.68      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.64
  SUBAREA AREA(ACRES) =    6.06      SUBAREA RUNOFF(CFS) =    4.64
  EFFECTIVE AREA(ACRES) =     59.18    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.71
  TOTAL AREA(ACRES) =     59.18        PEAK FLOW RATE(CFS) =      44.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.71   HALFSTREET FLOOD WIDTH(FEET) =  28.57
  FLOW VELOCITY(FEET/SEC.) =  2.63   DEPTH*VELOCITY(FT*FT/SEC.) =   1.87
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20628.00 =  3218.91 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020628.0 TO NODE LR020629.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2108.00  DOWNSTREAM ELEVATION(FEET) = 2103.00
  STREET LENGTH(FEET) =   256.63   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      46.90
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.57
    HALFSTREET FLOOD WIDTH(FEET) =   21.62
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.65
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.66
  STREET FLOW TRAVEL TIME(MIN.) =   0.92   Tc(MIN.) =  26.66
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.302
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.98      0.75      0.40    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.92      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.13      0.75      0.60    56
```

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  COMMERCIAL                  B        0.27      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.59
  SUBAREA AREA(ACRES) =    5.30      SUBAREA RUNOFF(CFS) =    4.10
  EFFECTIVE AREA(ACRES) =     64.48    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     64.48        PEAK FLOW RATE(CFS) =      47.13

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.57   HALFSTREET FLOOD WIDTH(FEET) =  21.68
  FLOW VELOCITY(FEET/SEC.) =  4.65   DEPTH*VELOCITY(FT*FT/SEC.) =   2.67
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20629.00 =  3475.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020629.0 TO NODE LR020630.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2103.00  DOWNSTREAM ELEVATION(FEET) = 2097.00
  STREET LENGTH(FEET) =   278.26   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.89

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      50.68
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.58
    HALFSTREET FLOOD WIDTH(FEET) =   21.80
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.95
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.85
  STREET FLOW TRAVEL TIME(MIN.) =   0.94   Tc(MIN.) =  27.60
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.275
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  CONDOMINIUMS                B        2.76      0.75      0.35    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"       B        0.90      0.75      0.40    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"          B        1.30      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        1.80      0.75      0.60    56
  COMMERCIAL                  B        1.62      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.45
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  SUBAREA AREA(ACRES) =    8.38      SUBAREA RUNOFF(CFS) =    7.10
  EFFECTIVE AREA(ACRES) =     72.86    AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.67
  TOTAL AREA(ACRES) =     72.86        PEAK FLOW RATE(CFS) =      52.68

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.58   HALFSTREET FLOOD WIDTH(FEET) =  22.16
  FLOW VELOCITY(FEET/SEC.) =  4.99   DEPTH*VELOCITY(FT*FT/SEC.) =   2.91
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20630.00 =  3753.80 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020630.0 TO NODE LR020631.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2097.00  DOWNSTREAM ELEVATION(FEET) = 2088.00
  STREET LENGTH(FEET) =   362.66   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.85

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      56.55
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.58
    HALFSTREET FLOOD WIDTH(FEET) =   22.16
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.36
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.12
  STREET FLOW TRAVEL TIME(MIN.) =   1.13   Tc(MIN.) =  28.73
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.245
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"       B        1.22      0.75      0.40    56
  CONDOMINIUMS                B        3.44      0.75      0.35    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"          B        0.22      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        2.91      0.75      0.60    56
  COMMERCIAL                  B        1.38      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.41
  SUBAREA AREA(ACRES) =    9.17      SUBAREA RUNOFF(CFS) =    7.73
  EFFECTIVE AREA(ACRES) =     82.03    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.64
```

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  TOTAL AREA(ACRES) =     82.03        PEAK FLOW RATE(CFS) =      58.42

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.59   HALFSTREET FLOOD WIDTH(FEET) =  22.41
  FLOW VELOCITY(FEET/SEC.) =  5.42   DEPTH*VELOCITY(FT*FT/SEC.) =   3.19
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20631.00 =  4116.46 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020631.0 TO NODE LR020632.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2088.00  DOWNSTREAM ELEVATION(FEET) = 2080.00
  STREET LENGTH(FEET) =   271.89   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.81

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      61.19
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.58
    HALFSTREET FLOOD WIDTH(FEET) =   22.10
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.83
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.39
  STREET FLOW TRAVEL TIME(MIN.) =   0.78   Tc(MIN.) =  29.50
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.225
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.65      0.75      0.40    56
  CONDOMINIUMS               B        1.64      0.75      0.35    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.35      0.75      0.60    56
  COMMERCIAL                 B        1.11      0.75      0.10    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.16      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.45
  SUBAREA AREA(ACRES) =    6.91      SUBAREA RUNOFF(CFS) =    5.53
  EFFECTIVE AREA(ACRES) =     88.94    AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.63
  TOTAL AREA(ACRES) =     88.94        PEAK FLOW RATE(CFS) =      62.49

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
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  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.59   HALFSTREET FLOOD WIDTH(FEET) =  22.29
  FLOW VELOCITY(FEET/SEC.) =  5.86   DEPTH*VELOCITY(FT*FT/SEC.) =   3.43
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20632.00 =  4388.35 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020632.0 TO NODE LR020633.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2080.00  DOWNSTREAM ELEVATION(FEET) = 2074.00
  STREET LENGTH(FEET) =   252.32   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.86

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      71.04
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.63
    HALFSTREET FLOOD WIDTH(FEET) =   24.30
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.66
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.55
  STREET FLOW TRAVEL TIME(MIN.) =   0.74   Tc(MIN.) =  30.25
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.207
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        4.07      0.75      0.40    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.86      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       20.53      0.75      0.90    56
  COMMERCIAL                 B        1.08      0.75      0.10    56
  MOBILE HOME PARK           B        0.18      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.76
  SUBAREA AREA(ACRES) =   29.72      SUBAREA RUNOFF(CFS) =   17.08
  EFFECTIVE AREA(ACRES) =    118.66    AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.66
  TOTAL AREA(ACRES) =    118.66        PEAK FLOW RATE(CFS) =      78.12

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

  END OF SUBAREA STREET FLOW HYDRAULICS:
```

```
  DEPTH(FEET) = 0.64   HALFSTREET FLOOD WIDTH(FEET) =  25.22
  FLOW VELOCITY(FEET/SEC.) =  5.81   DEPTH*VELOCITY(FT*FT/SEC.) =   3.74
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  252.3 FT WITH ELEVATION-DROP =   6.0 FT, IS   71.1 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20633.00
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20633.00 =  4640.67 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020633.0 TO NODE LR020644.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2074.00  DOWNSTREAM ELEVATION(FEET) = 2068.00
  STREET LENGTH(FEET) =   104.43   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.67

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      78.41
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.57
    HALFSTREET FLOOD WIDTH(FEET) =   21.43
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.91
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.50
  STREET FLOW TRAVEL TIME(MIN.) =   0.22   Tc(MIN.) =  30.47
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.201
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.22      0.75      0.40    56
  COMMERCIAL                 B        0.35      0.75      0.10    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.11      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.33
  SUBAREA AREA(ACRES) =    0.68      SUBAREA RUNOFF(CFS) =    0.59
  EFFECTIVE AREA(ACRES) =    119.34    AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.66
  TOTAL AREA(ACRES) =    119.34        PEAK FLOW RATE(CFS) =      78.15

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.57   HALFSTREET FLOOD WIDTH(FEET) =  21.37
  FLOW VELOCITY(FEET/SEC.) =  7.92   DEPTH*VELOCITY(FT*FT/SEC.) =   4.49
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20644.00 =  4745.10 FEET.
```



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****************************************************************************
  FLOW PROCESS FROM NODE LR020644.0 TO NODE LR020644.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  30.47
  RAINFALL INTENSITY(INCH/HR) =   1.20
  AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.72
  AREA-AVERAGED Ap =  0.66
  EFFECTIVE STREAM AREA(ACRES) =   119.34
  TOTAL STREAM AREA(ACRES) =   119.34
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     78.15

****************************************************************************
  FLOW PROCESS FROM NODE LR020640.0 TO NODE LR020641.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1072.64
  ELEVATION DATA: UPSTREAM(FEET) =   2182.00  DOWNSTREAM(FEET) =   2120.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.781
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.241
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        7.20      0.75      0.40    56   10.78
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.52      0.61      1.00    66   20.35
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.56
  SUBAREA RUNOFF(CFS) =     16.27
  TOTAL AREA(ACRES) =      9.72   PEAK FLOW RATE(CFS) =     16.27

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

****************************************************************************
  FLOW PROCESS FROM NODE LR020641.0 TO NODE LR020642.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2120.00  DOWNSTREAM ELEVATION(FEET) = 2119.00
  STREET LENGTH(FEET) =   375.42   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
```

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  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      17.47
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.57
    HALFSTREET FLOOD WIDTH(FEET) =   21.68
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.72
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.99
  STREET FLOW TRAVEL TIME(MIN.) =   3.63   Tc(MIN.) =  14.41
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.883
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.12      0.61      1.00    66
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.78      0.75      0.40    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.64
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.75
  SUBAREA AREA(ACRES) =    1.90      SUBAREA RUNOFF(CFS) =    2.39
  EFFECTIVE AREA(ACRES) =     11.62    AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.59
  TOTAL AREA(ACRES) =     11.62        PEAK FLOW RATE(CFS) =      16.27
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.56   HALFSTREET FLOOD WIDTH(FEET) =  21.13
  FLOW VELOCITY(FEET/SEC.) =  1.68   DEPTH*VELOCITY(FT*FT/SEC.) =   0.95
  LONGEST FLOWPATH FROM NODE  20640.00 TO NODE  20642.00 =  1448.06 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020642.0 TO NODE LR020643.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2119.00  DOWNSTREAM ELEVATION(FEET) = 2100.00
  STREET LENGTH(FEET) =   635.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.81
```



```
    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      18.79
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.42
    HALFSTREET FLOOD WIDTH(FEET) =   14.84
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.05
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.71
  STREET FLOW TRAVEL TIME(MIN.) =   2.61   Tc(MIN.) =  17.02
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.704
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        3.99      0.75      0.40    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
  SUBAREA AREA(ACRES) =    3.99      SUBAREA RUNOFF(CFS) =    5.04
  EFFECTIVE AREA(ACRES) =     15.61    AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.69  AREA-AVERAGED Ap =  0.54
  TOTAL AREA(ACRES) =     15.61        PEAK FLOW RATE(CFS) =      18.70

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.42   HALFSTREET FLOOD WIDTH(FEET) =  14.76
  FLOW VELOCITY(FEET/SEC.) =  4.07   DEPTH*VELOCITY(FT*FT/SEC.) =   1.72
  LONGEST FLOWPATH FROM NODE  20640.00 TO NODE  20643.00 =  2083.06 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020643.0 TO NODE LR020644.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  2100.00
  DOWNSTREAM NODE ELEVATION(FEET) =  2068.00
  FLOW LENGTH(FEET) =   663.17   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  48.0 INCH PIPE IS   7.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.76
  PIPE-FLOW(CFS) =     18.70
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.80    Tc(MIN.) =  17.82
  LONGEST FLOWPATH FROM NODE  20640.00 TO NODE  20644.00 =  2746.23 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020644.0 TO NODE LR020644.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.82
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.657
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        1.89      0.75      0.40    56
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  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.02      0.75      0.60    56
  COMMERCIAL                 B        0.11      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.39
  SUBAREA AREA(ACRES) =    2.02      SUBAREA RUNOFF(CFS) =    2.49
  EFFECTIVE AREA(ACRES) =     17.63   AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.52
  TOTAL AREA(ACRES) =     17.63       PEAK FLOW RATE(CFS) =      20.54

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

****************************************************************************
  FLOW PROCESS FROM NODE LR020644.0 TO NODE LR020644.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  17.82
  RAINFALL INTENSITY(INCH/HR) =   1.66
  AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.70
  AREA-AVERAGED Ap =  0.52
  EFFECTIVE STREAM AREA(ACRES) =    17.63
  TOTAL STREAM AREA(ACRES) =    17.63
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     20.54

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     78.15  30.47    1.201  0.72( 0.47) 0.66   119.3 LR020620.0
      2     20.54  17.82    1.657  0.70( 0.36) 0.52    17.6 LR020640.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     94.90  17.82    1.657  0.72( 0.45) 0.63    87.5 LR020640.0
      2     91.45  30.47    1.201  0.72( 0.46) 0.64   137.0 LR020620.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     94.90    Tc(MIN.) =    17.82
  EFFECTIVE AREA(ACRES) =    87.45   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.63
  TOTAL AREA(ACRES) =    136.97
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20644.00 =  4745.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020644.0 TO NODE LR020645.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
```



```
UPSTREAM ELEVATION(FEET) = 2068.00  DOWNSTREAM ELEVATION(FEET) = 2059.00
STREET LENGTH(FEET) =   221.04   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.74

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     105.03
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.65
  HALFSTREET FLOOD WIDTH(FEET) =   25.46
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.67
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.98
STREET FLOW TRAVEL TIME(MIN.) =   0.48   Tc(MIN.) =  18.30
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.631
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"8-10 DWELLINGS/ACRE"       B        0.33      0.75      0.40    56
COMMERCIAL                  B        2.57      0.75      0.10    56
RESIDENTIAL
".4 DWELLING/ACRE"          B        6.71      0.75      0.90    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"        B        9.85      0.75      0.60    56
MOBILE HOME PARK            B        0.01      0.75      0.25    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
SUBAREA AREA(ACRES) =   19.47      SUBAREA RUNOFF(CFS) =   20.27
EFFECTIVE AREA(ACRES) =    106.92    AREA-AVERAGED Fm(INCH/HR) =  0.46
AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.63
TOTAL AREA(ACRES) =    156.44        PEAK FLOW RATE(CFS) =     113.10

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.66   HALFSTREET FLOOD WIDTH(FEET) =  26.19
FLOW VELOCITY(FEET/SEC.) =  7.83   DEPTH*VELOCITY(FT*FT/SEC.) =   5.20
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  13.38
PIPE-FLOW(CFS) =     42.08
PIPEFLOW TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =  18.10
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.642
SUBAREA AREA(ACRES) =   19.47      SUBAREA RUNOFF(CFS) =   20.47
TOTAL AREA(ACRES) =    156.44        PEAK FLOW RATE(CFS) =    114.17

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
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  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   72.09
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.58
    HALFSTREET FLOOD WIDTH(FEET) =   22.10
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.86
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.00

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    114.17  18.10    1.642  0.72( 0.46) 0.63   106.9 LR020640.0
      2    103.29  30.74    1.195  0.72( 0.46) 0.64   156.4 LR020620.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    114.17  Tc(MIN.) =  18.10
  AREA-AVERAGED Fm(INCH/HR) =  0.46  AREA-AVERAGED Fp(INCH/HR) =  0.72
  AREA-AVERAGED Ap =  0.63  EFFECTIVE AREA(ACRES) =    106.92
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20645.00 =  4966.14 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020645.0 TO NODE LR020646.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2059.00  DOWNSTREAM ELEVATION(FEET) = 2046.00
  STREET LENGTH(FEET) =   302.67   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.73

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     124.02
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.68
    HALFSTREET FLOOD WIDTH(FEET) =   26.86
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.18
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.54
  STREET FLOW TRAVEL TIME(MIN.) =   0.62   Tc(MIN.) =  18.72
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.609
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        9.08      0.75      0.40    56
  COMMERCIAL                 B        5.79      0.75      0.10    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.74      0.75      0.50    56
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  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.22      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.30
  SUBAREA AREA(ACRES) =   15.83      SUBAREA RUNOFF(CFS) =   19.71
  EFFECTIVE AREA(ACRES) =    122.75    AREA-AVERAGED Fm(INCH/HR) =  0.62
  AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.85
  TOTAL AREA(ACRES) =    172.27        PEAK FLOW RATE(CFS) =     114.17
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.66   HALFSTREET FLOOD WIDTH(FEET) =  26.01
  FLOW VELOCITY(FEET/SEC.) =  8.01   DEPTH*VELOCITY(FT*FT/SEC.) =   5.29
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.75
  PIPE-FLOW(CFS) =     43.22
  PIPEFLOW TRAVEL TIME(MIN.) =   0.37    Tc(MIN.) =  18.47
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.622
  SUBAREA AREA(ACRES) =   15.83      SUBAREA RUNOFF(CFS) =   19.90
  TOTAL AREA(ACRES) =    172.27        PEAK FLOW RATE(CFS) =    114.17
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   70.95
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.57
    HALFSTREET FLOOD WIDTH(FEET) =   21.74
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.97
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.01

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    132.17  18.47    1.622  0.72( 0.43) 0.59   122.8 LR020640.0
      2    115.78  31.11    1.186  0.72( 0.44) 0.61   172.3 LR020620.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    132.17  Tc(MIN.) =  18.47
  AREA-AVERAGED Fm(INCH/HR) =  0.43  AREA-AVERAGED Fp(INCH/HR) =  0.72
  AREA-AVERAGED Ap =  0.59  EFFECTIVE AREA(ACRES) =    122.75
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20646.00 =  5268.81 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020646.0 TO NODE LR020647.0 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2046.00  DOWNSTREAM(FEET) =  2030.00
  FLOW LENGTH(FEET) =   325.06   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  28.5 INCHES
```

```
  PIPE-FLOW VELOCITY(FEET/SEC.) =  21.99
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    132.17
  PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =  18.71
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20647.00 =  5593.87 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020647.0 TO NODE LR020647.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  18.71
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.610
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B       20.06      0.75      0.25    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       29.79      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       14.97      0.75      0.60    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B       13.31      0.75      0.40    56
  COMMERCIAL                 B       16.98      0.75      0.10    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B       17.61      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =  112.72      SUBAREA RUNOFF(CFS) =  125.15
  EFFECTIVE AREA(ACRES) =    235.47   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =    284.99       PEAK FLOW RATE(CFS) =     234.79

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    255.91  18.71    1.610  0.73( 0.40) 0.55   235.5 LR020640.0
      2    196.56  31.36    1.181  0.73( 0.41) 0.57   285.0 LR020620.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    255.91  Tc(MIN.) =  18.71
  AREA-AVERAGED Fm(INCH/HR) =  0.40  AREA-AVERAGED Fp(INCH/HR) =  0.73
  AREA-AVERAGED Ap =  0.55  EFFECTIVE AREA(ACRES) =    235.47

****************************************************************************
  FLOW PROCESS FROM NODE LR020647.0 TO NODE LR020648.0 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2030.00  DOWNSTREAM(FEET) =  2025.00
  FLOW LENGTH(FEET) =   149.90   MANNING'S N =  0.013
  DEPTH OF FLOW IN  51.0 INCH PIPE IS  37.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  22.68
  ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    255.91
```



```
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =  18.82
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20648.00 =  5743.77 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020648.0 TO NODE LR020648.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  18.82
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.604
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B       0.31      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =    0.31      SUBAREA RUNOFF(CFS) =    0.34
  EFFECTIVE AREA(ACRES) =    235.78   AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.55
  TOTAL AREA(ACRES) =    285.30       PEAK FLOW RATE(CFS) =     255.91
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

****************************************************************************
  FLOW PROCESS FROM NODE LR020648.0 TO NODE LR020648.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    255.91  18.82    1.604  0.73( 0.40) 0.55   235.8 LR020640.0
      2    196.56  31.48    1.178  0.73( 0.41) 0.57   285.3 LR020620.0
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20648.00 =  5743.77 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    103.10  29.30    1.230  0.75( 0.44) 0.58   144.5 LR020600.0
  LONGEST FLOWPATH FROM NODE  20600.00 TO NODE  20648.00 =  5640.07 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    353.38  18.82    1.604  0.74( 0.41) 0.56   328.6 LR020640.0
      2    309.88  29.30    1.230  0.74( 0.42) 0.57   421.2 LR020600.0
      3    292.92  31.48    1.178  0.74( 0.42) 0.57   429.8 LR020620.0
    TOTAL AREA(ACRES) =    429.76

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      353.38  Tc(MIN.) =   18.823
  EFFECTIVE AREA(ACRES) =    328.60  AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.56
  TOTAL AREA(ACRES) =    429.76
```

```
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20648.00 =  5743.77 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020648.0 TO NODE LR020648.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020648.0 TO NODE LR020655.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2025.00  DOWNSTREAM ELEVATION(FEET) = 2020.00
  STREET LENGTH(FEET) =   623.73   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     357.20
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.28
    HALFSTREET FLOOD WIDTH(FEET) =   56.77
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.48
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.99
  STREET FLOW TRAVEL TIME(MIN.) =   1.90   Tc(MIN.) =  20.72
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.514
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        2.58      0.75      0.50    56
  COMMERCIAL                 B        3.03      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.11      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.00      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.08      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.36
  SUBAREA AREA(ACRES) =    6.80      SUBAREA RUNOFF(CFS) =    7.63
  EFFECTIVE AREA(ACRES) =    335.40    AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.55
  TOTAL AREA(ACRES) =    436.56        PEAK FLOW RATE(CFS) =     353.38
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
```



```
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.27   HALFSTREET FLOOD WIDTH(FEET) =  56.53
  FLOW VELOCITY(FEET/SEC.) =  5.47   DEPTH*VELOCITY(FT*FT/SEC.) =   6.95

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  66.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.66
  PIPE-FLOW(CFS) =    277.26
  PIPEFLOW TRAVEL TIME(MIN.) =   0.89    Tc(MIN.) =  19.71
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.560
  SUBAREA AREA(ACRES) =    6.80      SUBAREA RUNOFF(CFS) =    7.91
  TOTAL AREA(ACRES) =    436.56        PEAK FLOW RATE(CFS) =    353.38
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   76.12
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.76
    HALFSTREET FLOOD WIDTH(FEET) =   30.83
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.86
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.92
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20655.00 =  6367.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020655.0 TO NODE LR020655.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  19.71
  RAINFALL INTENSITY(INCH/HR) =   1.56
  AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.74
  AREA-AVERAGED Ap =  0.55
  EFFECTIVE STREAM AREA(ACRES) =   335.40
  TOTAL STREAM AREA(ACRES) =   436.56
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    353.38

****************************************************************************
  FLOW PROCESS FROM NODE LR020649.0 TO NODE LR020650.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   545.44
  ELEVATION DATA: UPSTREAM(FEET) =   2195.00  DOWNSTREAM(FEET) =   2170.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
```

```
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.492
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.419
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.54      0.75      0.70    56   10.09
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.61      0.75      0.60    56    9.49
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA RUNOFF(CFS) =     12.30
  TOTAL AREA(ACRES) =      7.15   PEAK FLOW RATE(CFS) =     12.30

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

****************************************************************************
  FLOW PROCESS FROM NODE LR020650.0 TO NODE LR020651.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2170.00  DOWNSTREAM ELEVATION(FEET) = 2130.00
  STREET LENGTH(FEET) =   374.60   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.56

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      19.30
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.36
    HALFSTREET FLOOD WIDTH(FEET) =   11.55
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.64
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.37
  STREET FLOW TRAVEL TIME(MIN.) =   0.94   Tc(MIN.) =  10.43
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.285
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        7.90      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.89      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    8.79      SUBAREA RUNOFF(CFS) =   14.00
  EFFECTIVE AREA(ACRES) =     15.94    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     15.94        PEAK FLOW RATE(CFS) =      25.44
```



```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.39   HALFSTREET FLOOD WIDTH(FEET) =  12.96
  FLOW VELOCITY(FEET/SEC.) =  7.08   DEPTH*VELOCITY(FT*FT/SEC.) =   2.73
  LONGEST FLOWPATH FROM NODE  20649.00 TO NODE  20651.00 =   920.04 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020651.0 TO NODE LR020652.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2130.00  DOWNSTREAM ELEVATION(FEET) = 2080.00
  STREET LENGTH(FEET) =   427.12   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.56

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      31.10
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.40
    HALFSTREET FLOOD WIDTH(FEET) =   13.82
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.67
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.09
  STREET FLOW TRAVEL TIME(MIN.) =   0.93   Tc(MIN.) =  11.36
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.171
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.22      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.35      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    7.57      SUBAREA RUNOFF(CFS) =   11.32
  EFFECTIVE AREA(ACRES) =     23.51    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     23.51        PEAK FLOW RATE(CFS) =      35.13

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.42   HALFSTREET FLOOD WIDTH(FEET) =  14.52
  FLOW VELOCITY(FEET/SEC.) =  7.88   DEPTH*VELOCITY(FT*FT/SEC.) =   3.29
  LONGEST FLOWPATH FROM NODE  20649.00 TO NODE  20652.00 =  1347.16 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR020652.0 TO NODE LR020653.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2080.00  DOWNSTREAM ELEVATION(FEET) = 2040.00
  STREET LENGTH(FEET) =   432.48   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.60

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      38.16
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.44
    HALFSTREET FLOOD WIDTH(FEET) =   15.70
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.39
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.25
  STREET FLOW TRAVEL TIME(MIN.) =   0.98   Tc(MIN.) =  12.34
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.067
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        3.90      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.45      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    4.35      SUBAREA RUNOFF(CFS) =    6.07
  EFFECTIVE AREA(ACRES) =     27.86    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     27.86        PEAK FLOW RATE(CFS) =      38.98

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.44   HALFSTREET FLOOD WIDTH(FEET) =  15.85
  FLOW VELOCITY(FEET/SEC.) =  7.41   DEPTH*VELOCITY(FT*FT/SEC.) =   3.28
  LONGEST FLOWPATH FROM NODE  20649.00 TO NODE  20653.00 =  1779.64 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020653.0 TO NODE LR020654.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2040.00  DOWNSTREAM ELEVATION(FEET) = 2030.00
```



```
  STREET LENGTH(FEET) =   283.32   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.77

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      40.63
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.51
    HALFSTREET FLOOD WIDTH(FEET) =   18.50
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.36
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.73
  STREET FLOW TRAVEL TIME(MIN.) =   0.88   Tc(MIN.) =  13.22
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.983
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.22      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.46      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.74      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
  SUBAREA AREA(ACRES) =    2.42      SUBAREA RUNOFF(CFS) =    3.30
  EFFECTIVE AREA(ACRES) =     30.28    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     30.28        PEAK FLOW RATE(CFS) =      40.18

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.51   HALFSTREET FLOOD WIDTH(FEET) =  18.44
  FLOW VELOCITY(FEET/SEC.) =  5.33   DEPTH*VELOCITY(FT*FT/SEC.) =   2.71
  LONGEST FLOWPATH FROM NODE  20649.00 TO NODE  20654.00 =  2062.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020654.0 TO NODE LR020655.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2030.00  DOWNSTREAM ELEVATION(FEET) = 2020.00
  STREET LENGTH(FEET) =   164.56   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
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  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.66

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      40.52
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.48
    HALFSTREET FLOOD WIDTH(FEET) =   17.49
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.38
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.04
  STREET FLOW TRAVEL TIME(MIN.) =   0.43   Tc(MIN.) =  13.65
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.945
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.41      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.10
  SUBAREA AREA(ACRES) =    0.41      SUBAREA RUNOFF(CFS) =    0.69
  EFFECTIVE AREA(ACRES) =     30.69    AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.67
  TOTAL AREA(ACRES) =     30.69        PEAK FLOW RATE(CFS) =      40.18
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.47   HALFSTREET FLOOD WIDTH(FEET) =  17.41
  FLOW VELOCITY(FEET/SEC.) =  6.38   DEPTH*VELOCITY(FT*FT/SEC.) =   3.03
  LONGEST FLOWPATH FROM NODE  20649.00 TO NODE  20655.00 =  2227.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020655.0 TO NODE LR020655.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  13.65
  RAINFALL INTENSITY(INCH/HR) =   1.95
  AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.67
  EFFECTIVE STREAM AREA(ACRES) =    30.69
  TOTAL STREAM AREA(ACRES) =    30.69
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     40.18

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    353.38  19.71    1.560  0.74( 0.41) 0.55   335.4 LR020640.0
      1    309.88  30.19    1.208  0.74( 0.42) 0.57   428.0 LR020600.0
      1    292.92  32.37    1.159  0.74( 0.42) 0.57   436.6 LR020620.0
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      2     40.18  13.65    1.945  0.75( 0.50) 0.67    30.7 LR020649.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    366.66  13.65    1.945  0.74( 0.42) 0.57   262.8 LR020649.0
      2    382.83  19.71    1.560  0.74( 0.42) 0.56   366.1 LR020640.0
      3    329.52  30.19    1.208  0.74( 0.42) 0.57   458.7 LR020600.0
      4    311.19  32.37    1.159  0.74( 0.43) 0.58   467.2 LR020620.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    382.83    Tc(MIN.) =    19.71
  EFFECTIVE AREA(ACRES) =   366.09   AREA-AVERAGED Fm(INCH/HR) =  0.42
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.56
  TOTAL AREA(ACRES) =    467.25
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20655.00 =  6367.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020655.0 TO NODE LR020656.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2020.00  DOWNSTREAM ELEVATION(FEET) = 2014.00
  STREET LENGTH(FEET) =   238.44   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.85

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     384.78
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.07
    HALFSTREET FLOOD WIDTH(FEET) =   46.64
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.70
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    9.33
  STREET FLOW TRAVEL TIME(MIN.) =   0.46   Tc(MIN.) =  20.17
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.539
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.66      0.75      0.50    56
  COMMERCIAL                 B        1.28      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.16      0.75      0.60    56
  RESIDENTIAL
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"2 DWELLINGS/ACRE"         B        1.49      0.75      0.70    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.44
SUBAREA AREA(ACRES) =    3.59      SUBAREA RUNOFF(CFS) =    3.90
EFFECTIVE AREA(ACRES) =    369.68    AREA-AVERAGED Fm(INCH/HR) =  0.42
AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.56
TOTAL AREA(ACRES) =    470.84        PEAK FLOW RATE(CFS) =     382.83
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.07   HALFSTREET FLOOD WIDTH(FEET) =  46.52
FLOW VELOCITY(FEET/SEC.) =  8.70   DEPTH*VELOCITY(FT*FT/SEC.) =   9.31

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.85
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  18.07
PIPE-FLOW(CFS) =    287.64
PIPEFLOW TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =  19.93
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.550
SUBAREA AREA(ACRES) =    3.59      SUBAREA RUNOFF(CFS) =    3.93
TOTAL AREA(ACRES) =    470.84        PEAK FLOW RATE(CFS) =    382.83
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   95.19
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.68
  HALFSTREET FLOOD WIDTH(FEET) =   26.93
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.25
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.24
LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20656.00 =  6605.94 FEET.

****************************************************************************
FLOW PROCESS FROM NODE LR020656.0 TO NODE LR020657.0 IS CODE =  63
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 2014.00  DOWNSTREAM ELEVATION(FEET) = 2004.00
STREET LENGTH(FEET) =   422.05   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
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Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.86

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     402.27
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  1.10
  HALFSTREET FLOOD WIDTH(FEET) =   48.04
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.58
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    9.44
STREET FLOW TRAVEL TIME(MIN.) =   0.82   Tc(MIN.) =  20.75
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.513
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"5-7 DWELLINGS/ACRE"        B        0.99      0.75      0.50    56
COMMERCIAL                  B        2.55      0.75      0.10    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"        B        3.13      0.75      0.60    56
RESIDENTIAL
"2 DWELLINGS/ACRE"          B       35.47      0.75      0.70    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.65
SUBAREA AREA(ACRES) =   42.14      SUBAREA RUNOFF(CFS) =   38.88
EFFECTIVE AREA(ACRES) =    411.82    AREA-AVERAGED Fm(INCH/HR) =  0.42
AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.57
TOTAL AREA(ACRES) =    512.98        PEAK FLOW RATE(CFS) =     403.73

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.10   HALFSTREET FLOOD WIDTH(FEET) =  48.10
FLOW VELOCITY(FEET/SEC.) =  8.59   DEPTH*VELOCITY(FT*FT/SEC.) =   9.46

*NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
       THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.86
SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
ESTIMATED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
ASSUME FULL-FLOWING PIPELINE
PIPE-FLOW VELOCITY(FEET/SEC.) =  18.18
PIPE-FLOW(CFS) =    322.41
PIPEFLOW TRAVEL TIME(MIN.) =   0.39    Tc(MIN.) =  20.32
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.532
SUBAREA AREA(ACRES) =   42.14      SUBAREA RUNOFF(CFS) =   39.61
TOTAL AREA(ACRES) =    512.98        PEAK FLOW RATE(CFS) =    410.87

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   88.46
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.67
  HALFSTREET FLOOD WIDTH(FEET) =   26.44
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    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.01
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.02

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    407.43  14.25    1.895  0.74( 0.43) 0.58   308.6 LR020649.0
      2    410.87  20.32    1.532  0.74( 0.42) 0.57   411.8 LR020640.0
      3    347.35  30.80    1.194  0.74( 0.43) 0.58   504.5 LR020600.0
      4    331.11  32.93    1.147  0.74( 0.43) 0.58   513.0 LR020620.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    410.87  Tc(MIN.) =  20.32
  AREA-AVERAGED Fm(INCH/HR) =  0.42  AREA-AVERAGED Fp(INCH/HR) =  0.74
  AREA-AVERAGED Ap =  0.57  EFFECTIVE AREA(ACRES) =    411.82
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20657.00 =  7027.99 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020657.0 TO NODE LR020658.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2004.00  DOWNSTREAM ELEVATION(FEET) = 2000.00
  STREET LENGTH(FEET) =   653.95   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     420.06
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.42
    HALFSTREET FLOOD WIDTH(FEET) =   63.91
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.10
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.23
  STREET FLOW TRAVEL TIME(MIN.) =   2.14   Tc(MIN.) =  22.46
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.443
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        1.69      0.75      0.50    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       14.94      0.75      0.70    56
  COMMERCIAL                 B        1.47      0.75      0.10    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.34      0.61      1.00    66
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.78      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
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  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.65
  SUBAREA AREA(ACRES) =   21.22      SUBAREA RUNOFF(CFS) =   18.38
  EFFECTIVE AREA(ACRES) =    433.04    AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.58
  TOTAL AREA(ACRES) =    534.20        PEAK FLOW RATE(CFS) =     410.87
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.41   HALFSTREET FLOOD WIDTH(FEET) =  63.30
  FLOW VELOCITY(FEET/SEC.) =  5.08   DEPTH*VELOCITY(FT*FT/SEC.) =   7.14

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.90
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  75.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.09
  PIPE-FLOW(CFS) =    340.58
  PIPEFLOW TRAVEL TIME(MIN.) =   0.98    Tc(MIN.) =  21.30
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.489
  SUBAREA AREA(ACRES) =   21.22      SUBAREA RUNOFF(CFS) =   19.27
  TOTAL AREA(ACRES) =    534.20        PEAK FLOW RATE(CFS) =    414.28

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.02
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   73.70
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.78
    HALFSTREET FLOOD WIDTH(FEET) =   32.05
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.46
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.71

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    412.39  15.24    1.821  0.74( 0.43) 0.58   329.8 LR020649.0
      2    414.28  21.30    1.489  0.74( 0.43) 0.58   433.0 LR020640.0
      3    350.43  31.78    1.171  0.74( 0.43) 0.58   525.7 LR020600.0
      4    335.36  33.79    1.129  0.74( 0.43) 0.58   534.2 LR020620.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    414.28  Tc(MIN.) =  21.30
  AREA-AVERAGED Fm(INCH/HR) =  0.43  AREA-AVERAGED Fp(INCH/HR) =  0.74
  AREA-AVERAGED Ap =  0.58  EFFECTIVE AREA(ACRES) =    433.04
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20658.00 =  7681.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020658.0 TO NODE LR020658.0 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20658.dna
============================================================================
```

```
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =    534.20  TC(MIN.) =     21.30
  EFFECTIVE AREA(ACRES) =    433.04  AREA-AVERAGED Fm(INCH/HR)=  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.58
  PEAK FLOW RATE(CFS)   =    414.28
 ============================================================================
 ============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
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                          Analysis prepared by:

                          San Bernardino County
                    Transportation/ Flood Control Department

                          Water Resources Division

 ************************ DESCRIPTION OF STUDY *************************
* LR0207ZZ                                                             *
* 10-Year Storm                                                        *
*                                                                      *
 ************************************************************************

  FILE NAME: LR0207ZZ.Z10
  TIME/DATE OF STUDY: 09:58 02/22/2006
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 0.8000

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
```



```
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


************************************************************************
  FLOW PROCESS FROM NODE LR020700.0 TO NODE LR020701.0 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   906.02
  ELEVATION DATA: UPSTREAM(FEET) =   2180.00  DOWNSTREAM(FEET) =   2130.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.204
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.190
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        5.30      0.61      1.00    66   19.20
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.69      0.75      0.60    56   11.20
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.66
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.81
  SUBAREA RUNOFF(CFS) =     14.86
  TOTAL AREA(ACRES) =      9.99   PEAK FLOW RATE(CFS) =     14.86

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

************************************************************************
  FLOW PROCESS FROM NODE LR020701.0 TO NODE LR020702.0 IS CODE =  92
------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
========================================================================
  UPSTREAM NODE ELEVATION(FEET) =   2130.00
  DOWNSTREAM NODE ELEVATION(FEET) =   2080.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   502.90
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
```

```
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.098
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.19      0.75      0.60    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.38      0.61      1.00    66
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.08      0.75      0.40    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.68
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.74
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     19.63
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.19
  AVERAGE FLOW DEPTH(FEET) =   0.47   FLOOD WIDTH(FEET) =   17.41
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.82   Tc(MIN.) =  12.03
  SUBAREA AREA(ACRES) =    6.65       SUBAREA RUNOFF(CFS) =    9.53
  EFFECTIVE AREA(ACRES) =   16.64     AREA-AVERAGED Fm(INCH/HR) =   0.52
  AREA-AVERAGED Fp(INCH/HR) =   0.67  AREA-AVERAGED Ap =   0.78
  TOTAL AREA(ACRES) =     16.64         PEAK FLOW RATE(CFS) =      23.57

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.49   FLOOD WIDTH(FEET) =   19.95
  FLOW VELOCITY(FEET/SEC.) =  10.12   DEPTH*VELOCITY(FT*FT/SEC) =   5.00
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20702.00 =  1408.92 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020702.0 TO NODE LR020703.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   2080.00
  DOWNSTREAM NODE ELEVATION(FEET) =   2075.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   222.67
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.026
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.10      0.75      0.60    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.64      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.65
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     27.38
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.09
  AVERAGE FLOW DEPTH(FEET) =   0.61   FLOOD WIDTH(FEET) =   33.39
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.73   Tc(MIN.) =  12.76
```



```
  SUBAREA AREA(ACRES) =    5.74       SUBAREA RUNOFF(CFS) =    7.60
  EFFECTIVE AREA(ACRES) =   22.38     AREA-AVERAGED Fm(INCH/HR) =   0.53
  AREA-AVERAGED Fp(INCH/HR) =   0.66  AREA-AVERAGED Ap =   0.80
  TOTAL AREA(ACRES) =     22.38         PEAK FLOW RATE(CFS) =      30.09

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.62   FLOOD WIDTH(FEET) =   34.89
  FLOW VELOCITY(FEET/SEC.) =   5.18   DEPTH*VELOCITY(FT*FT/SEC) =   3.22
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20703.00 =  1631.59 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020703.0 TO NODE LR020704.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   2075.00
  DOWNSTREAM NODE ELEVATION(FEET) =   2070.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   175.13
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.979
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.53      0.61      1.00    66
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.24      0.75      0.40    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.09      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.71
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.66
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     32.04
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.77
  AVERAGE FLOW DEPTH(FEET) =   0.61   FLOOD WIDTH(FEET) =   33.99
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.51   Tc(MIN.) =  13.26
  SUBAREA AREA(ACRES) =    2.86       SUBAREA RUNOFF(CFS) =    3.89
  EFFECTIVE AREA(ACRES) =   25.24     AREA-AVERAGED Fm(INCH/HR) =   0.52
  AREA-AVERAGED Fp(INCH/HR) =   0.67  AREA-AVERAGED Ap =   0.79
  TOTAL AREA(ACRES) =     25.24         PEAK FLOW RATE(CFS) =      33.04

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.62   FLOOD WIDTH(FEET) =   34.44
  FLOW VELOCITY(FEET/SEC.) =   5.82   DEPTH*VELOCITY(FT*FT/SEC) =   3.59
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20704.00 =  1806.72 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020704.0 TO NODE LR020705.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
==========================================================================
  UPSTREAM NODE ELEVATION(FEET) =   2070.00
  DOWNSTREAM NODE ELEVATION(FEET) =   2065.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   236.79
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.914
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        4.91      0.75      0.40    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.39      0.75      0.60    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.79      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.72
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.52
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     38.64
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.24
  AVERAGE FLOW DEPTH(FEET) =   0.66   FLOOD WIDTH(FEET) =   39.82
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.75   Tc(MIN.) =  14.01
  SUBAREA AREA(ACRES) =    8.09       SUBAREA RUNOFF(CFS) =   11.22
  EFFECTIVE AREA(ACRES) =   33.33     AREA-AVERAGED Fm(INCH/HR) =   0.49
  AREA-AVERAGED Fp(INCH/HR) =   0.68  AREA-AVERAGED Ap =   0.72
  TOTAL AREA(ACRES) =     33.33         PEAK FLOW RATE(CFS) =      42.79

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.68   FLOOD WIDTH(FEET) =   41.76
  FLOW VELOCITY(FEET/SEC.) =   5.32   DEPTH*VELOCITY(FT*FT/SEC) =   3.61
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20705.00 =  2043.51 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020705.0 TO NODE LR020706.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
==========================================================================
  UPSTREAM ELEVATION(FEET) = 2065.00  DOWNSTREAM ELEVATION(FEET) = 2060.00
  STREET LENGTH(FEET) =   308.42   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      45.40
```



```
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.58
    HALFSTREET FLOOD WIDTH(FEET) =   22.10
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.32
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.52
  STREET FLOW TRAVEL TIME(MIN.) =   1.19   Tc(MIN.) =  15.20
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.823
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.14      0.61      1.00    66
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.43      0.75      0.60    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.92      0.75      0.40    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.64
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.84
  SUBAREA AREA(ACRES) =    4.49       SUBAREA RUNOFF(CFS) =    5.21
  EFFECTIVE AREA(ACRES) =     37.82    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =     37.82         PEAK FLOW RATE(CFS) =      45.26

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.58   HALFSTREET FLOOD WIDTH(FEET) =  22.04
  FLOW VELOCITY(FEET/SEC.) =  4.33   DEPTH*VELOCITY(FT*FT/SEC.) =   2.52
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20706.00 =  2351.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020706.0 TO NODE LR020707.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
==========================================================================
  UPSTREAM ELEVATION(FEET) = 2060.00  DOWNSTREAM ELEVATION(FEET) = 2055.00
  STREET LENGTH(FEET) =   216.66   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      45.78
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.56
    HALFSTREET FLOOD WIDTH(FEET) =   20.76
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.90
```

```
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.72
  STREET FLOW TRAVEL TIME(MIN.) =   0.74   Tc(MIN.) =  15.94
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.772
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.78      0.75      0.40    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
  SUBAREA AREA(ACRES) =    0.78      SUBAREA RUNOFF(CFS) =    1.03
  EFFECTIVE AREA(ACRES) =     38.60    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =     38.60        PEAK FLOW RATE(CFS) =      45.26
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.55   HALFSTREET FLOOD WIDTH(FEET) =  20.70
  FLOW VELOCITY(FEET/SEC.) =  4.87   DEPTH*VELOCITY(FT*FT/SEC.) =   2.70
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20707.00 =  2568.59 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020707.0 TO NODE LR020708.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2055.00  DOWNSTREAM ELEVATION(FEET) = 2040.00
  STREET LENGTH(FEET) =   337.91   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.72

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      49.17
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.52
    HALFSTREET FLOOD WIDTH(FEET) =   18.99
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.19
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.22
  STREET FLOW TRAVEL TIME(MIN.) =   0.91   Tc(MIN.) =  16.85
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.714
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.36      0.61      1.00    66
```



```
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.39      0.75      0.70    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        1.58      0.75      0.40    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.65
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.81
  SUBAREA AREA(ACRES) =    7.33      SUBAREA RUNOFF(CFS) =    7.82
  EFFECTIVE AREA(ACRES) =     45.93    AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.74
  TOTAL AREA(ACRES) =     45.93        PEAK FLOW RATE(CFS) =      50.36

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.52   HALFSTREET FLOOD WIDTH(FEET) =  19.11
  FLOW VELOCITY(FEET/SEC.) =  6.27   DEPTH*VELOCITY(FT*FT/SEC.) =   3.27
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20708.00 =  2906.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020708.0 TO NODE LR020709.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2040.00  DOWNSTREAM ELEVATION(FEET) = 2035.00
  STREET LENGTH(FEET) =   377.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      52.84
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.83
    HALFSTREET FLOOD WIDTH(FEET) =   41.41
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.41
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.64
  STREET FLOW TRAVEL TIME(MIN.) =   1.43   Tc(MIN.) =  18.28
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.632
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        0.45      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.33      0.61      1.00    66
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        1.75      0.75      0.40    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        1.06      0.75      0.50    56
```

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  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
  SUBAREA AREA(ACRES) =     4.59      SUBAREA RUNOFF(CFS) =     4.97
  EFFECTIVE AREA(ACRES) =     50.52    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =     50.52        PEAK FLOW RATE(CFS) =      51.95

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.82   HALFSTREET FLOOD WIDTH(FEET) =  40.94
  FLOW VELOCITY(FEET/SEC.) =  4.40   DEPTH*VELOCITY(FT*FT/SEC.) =   3.62
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20709.00 =  3283.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020709.0 TO NODE LR020710.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2035.00  DOWNSTREAM ELEVATION(FEET) = 2030.00
  STREET LENGTH(FEET) =   326.96   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.06

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      53.97
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.81
    HALFSTREET FLOOD WIDTH(FEET) =   40.16
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.70
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.83
  STREET FLOW TRAVEL TIME(MIN.) =   1.16   Tc(MIN.) =  19.44
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.573
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        0.82      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.94      0.61      1.00    66
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        1.18      0.75      0.40    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        1.02      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.70
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
  SUBAREA AREA(ACRES) =     3.96      SUBAREA RUNOFF(CFS) =     4.04
  EFFECTIVE AREA(ACRES) =     54.48    AREA-AVERAGED Fm(INCH/HR) =  0.49
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  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.72
  TOTAL AREA(ACRES) =     54.48        PEAK FLOW RATE(CFS) =      53.31

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.81   HALFSTREET FLOOD WIDTH(FEET) =  39.85
  FLOW VELOCITY(FEET/SEC.) =  4.69   DEPTH*VELOCITY(FT*FT/SEC.) =   3.81
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20710.00 =  3610.46 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020710.0 TO NODE LR020711.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2030.00  DOWNSTREAM ELEVATION(FEET) = 2025.00
  STREET LENGTH(FEET) =   298.59   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.04

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      55.93
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.81
    HALFSTREET FLOOD WIDTH(FEET) =   40.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.90
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.98
  STREET FLOW TRAVEL TIME(MIN.) =   1.02   Tc(MIN.) =  20.45
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.526
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.34      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.61      1.00    66
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.27      0.75      0.40    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.92      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.66
  SUBAREA AREA(ACRES) =     5.63      SUBAREA RUNOFF(CFS) =     5.25
  EFFECTIVE AREA(ACRES) =     60.11    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.72
  TOTAL AREA(ACRES) =     60.11        PEAK FLOW RATE(CFS) =      56.23

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
```

```
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.81   HALFSTREET FLOOD WIDTH(FEET) =  40.16
  FLOW VELOCITY(FEET/SEC.) =  4.90   DEPTH*VELOCITY(FT*FT/SEC.) =   3.99
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20711.00 =  3909.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020711.0 TO NODE LR020712.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2025.00  DOWNSTREAM(FEET) =   2020.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   279.66   CHANNEL SLOPE =  0.0179
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     56.23
  FLOW VELOCITY(FEET/SEC.) =   5.43   FLOW DEPTH(FEET) =   1.35
  TRAVEL TIME(MIN.) =   0.86   Tc(MIN.) =  21.31
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20712.00 =  4188.71 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020712.0 TO NODE LR020712.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.31
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.489
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.62      0.75      0.70    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.72      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.66
  SUBAREA AREA(ACRES) =    3.34      SUBAREA RUNOFF(CFS) =    3.00
  EFFECTIVE AREA(ACRES) =     63.45   AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.71
  TOTAL AREA(ACRES) =     63.45       PEAK FLOW RATE(CFS) =      57.22

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

****************************************************************************
  FLOW PROCESS FROM NODE LR020712.0 TO NODE LR020713.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2020.00  DOWNSTREAM(FEET) =   2000.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   371.84   CHANNEL SLOPE =  0.0538
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     57.22
  FLOW VELOCITY(FEET/SEC.) =   8.07   FLOW DEPTH(FEET) =   1.01
```



```
  TRAVEL TIME(MIN.) =   0.77   Tc(MIN.) =  22.08
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20713.00 =  4560.55 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020713.0 TO NODE LR020713.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  22.08
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.457
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.10      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.26      0.61      1.00    66
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        1.09      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.82
  SUBAREA AREA(ACRES) =    6.45      SUBAREA RUNOFF(CFS) =    5.30
  EFFECTIVE AREA(ACRES) =     69.90   AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.72
  TOTAL AREA(ACRES) =     69.90       PEAK FLOW RATE(CFS) =      60.74

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

****************************************************************************
  FLOW PROCESS FROM NODE LR020713.0 TO NODE LR020724.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2000.00  DOWNSTREAM(FEET) =   1960.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   732.38   CHANNEL SLOPE =  0.0546
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     60.74
  FLOW VELOCITY(FEET/SEC.) =   8.30   FLOW DEPTH(FEET) =   1.03
  TRAVEL TIME(MIN.) =   1.47   Tc(MIN.) =  23.55
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20724.00 =  5292.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020724.0 TO NODE LR020724.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  23.55
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.402
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.63      0.61      1.00    66
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        1.94      0.75      0.50    56
```

```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.65
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.79
  SUBAREA AREA(ACRES) =    4.57      SUBAREA RUNOFF(CFS) =    3.66
  EFFECTIVE AREA(ACRES) =     74.47   AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =     74.47       PEAK FLOW RATE(CFS) =      60.92

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

****************************************************************************
  FLOW PROCESS FROM NODE LR020724.0 TO NODE LR020724.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020718.0 TO NODE LR020719.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   714.44
  ELEVATION DATA: UPSTREAM(FEET) =   2125.00  DOWNSTREAM(FEET) =   2040.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.738
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.542
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.21      0.75      0.60    56    8.74
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.38      0.61      1.00    66   14.97
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.85      0.75      0.70    56    9.29
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.71
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.75
  SUBAREA RUNOFF(CFS) =     13.42
  TOTAL AREA(ACRES) =      7.44   PEAK FLOW RATE(CFS) =     13.42

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

****************************************************************************
  FLOW PROCESS FROM NODE LR020719.0 TO NODE LR020719.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.74
  RAINFALL INTENSITY(INCH/HR) =   2.54
  AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.71
  AREA-AVERAGED Ap =  0.75
  EFFECTIVE STREAM AREA(ACRES) =     7.44
```



```
  TOTAL STREAM AREA(ACRES) =     7.44
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.42

****************************************************************************
  FLOW PROCESS FROM NODE LR020718.5 TO NODE LR020719.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   522.86
  ELEVATION DATA: UPSTREAM(FEET) =   2100.00  DOWNSTREAM(FEET) =   2040.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.768
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.728
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.21      0.75      0.60    56    7.77
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.34      0.61      1.00    66   13.31
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.69      0.75      0.70    56    8.26
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.79
  SUBAREA RUNOFF(CFS) =     14.19
  TOTAL AREA(ACRES) =      7.24   PEAK FLOW RATE(CFS) =     14.19

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

****************************************************************************
  FLOW PROCESS FROM NODE LR020719.0 TO NODE LR020719.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   7.77
  RAINFALL INTENSITY(INCH/HR) =   2.73
  AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.69
  AREA-AVERAGED Ap =  0.79
  EFFECTIVE STREAM AREA(ACRES) =     7.24
  TOTAL STREAM AREA(ACRES) =     7.24
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     14.19

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     13.42   8.74    2.542  0.71( 0.54) 0.75     7.4 LR020718.0
      2     14.19   7.77    2.728  0.69( 0.55) 0.79     7.2 LR020718.5

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.
```

```
 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1     27.22   7.77    2.728  0.70( 0.54) 0.77    13.9 LR020718.5
     2     26.39   8.74    2.542  0.70( 0.54) 0.77    14.7 LR020718.0

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     27.22    Tc(MIN.) =     7.77
 EFFECTIVE AREA(ACRES) =    13.85   AREA-AVERAGED Fm(INCH/HR) =  0.54
 AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.77
 TOTAL AREA(ACRES) =     14.68
 LONGEST FLOWPATH FROM NODE  20718.00 TO NODE  20719.00 =   714.44 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020719.0 TO NODE LR020722.0 IS CODE =  92
----------------------------------------------------------------------------
 >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =   2040.00
 DOWNSTREAM NODE ELEVATION(FEET) =   2015.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   351.50
 "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
 PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
 PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
 MAXIMUM DEPTH(FEET) =   1.00
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.595
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        5.48      0.75      0.70    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     32.33
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.67
 AVERAGE FLOW DEPTH(FEET) =   0.55   FLOOD WIDTH(FEET) =   26.97
 "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.68   Tc(MIN.) =   8.44
 SUBAREA AREA(ACRES) =    5.48       SUBAREA RUNOFF(CFS) =   10.21
 EFFECTIVE AREA(ACRES) =   19.33     AREA-AVERAGED Fm(INCH/HR) =   0.54
 AREA-AVERAGED Fp(INCH/HR) =   0.72  AREA-AVERAGED Ap =   0.75
 TOTAL AREA(ACRES) =     20.16         PEAK FLOW RATE(CFS) =      35.77

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

 END OF SUBAREA "V" GUTTER HYDRAULICS:
 DEPTH(FEET) =  0.57   FLOOD WIDTH(FEET) =   28.47
 FLOW VELOCITY(FEET/SEC.) =   8.77   DEPTH*VELOCITY(FT*FT/SEC) =   4.97
 LONGEST FLOWPATH FROM NODE  20718.00 TO NODE  20722.00 =  1065.94 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020722.0 TO NODE LR020722.0 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   8.44
```



```
 RAINFALL INTENSITY(INCH/HR) =   2.59
 AREA-AVERAGED Fm(INCH/HR) =  0.54
 AREA-AVERAGED Fp(INCH/HR) =  0.72
 AREA-AVERAGED Ap =  0.75
 EFFECTIVE STREAM AREA(ACRES) =    19.33
 TOTAL STREAM AREA(ACRES) =    20.16
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     35.77

****************************************************************************
 FLOW PROCESS FROM NODE LR020720.0 TO NODE LR020721.0 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  1046.89
 ELEVATION DATA: UPSTREAM(FEET) =   2105.00  DOWNSTREAM(FEET) =   2020.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.682
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.135
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        5.65      0.75      0.70    56   11.68
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
 SUBAREA RUNOFF(CFS) =      8.20
 TOTAL AREA(ACRES) =      5.65   PEAK FLOW RATE(CFS) =      8.20

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

****************************************************************************
 FLOW PROCESS FROM NODE LR020721.0 TO NODE LR020722.0 IS CODE =  92
----------------------------------------------------------------------------
 >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =   2020.00
 DOWNSTREAM NODE ELEVATION(FEET) =   2015.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   115.32
 "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
 PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
 PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
 MAXIMUM DEPTH(FEET) =   1.00
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.105
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        1.32      0.75      0.70    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        4.12      0.61      1.00    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.64
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.93
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     11.90
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.78
 AVERAGE FLOW DEPTH(FEET) =   0.46   FLOOD WIDTH(FEET) =   16.22
```

```
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.28   Tc(MIN.) =  11.97
  SUBAREA AREA(ACRES) =    5.44       SUBAREA RUNOFF(CFS) =    7.41
  EFFECTIVE AREA(ACRES) =   11.09     AREA-AVERAGED Fm(INCH/HR) =   0.56
  AREA-AVERAGED Fp(INCH/HR) =   0.69  AREA-AVERAGED Ap =   0.81
  TOTAL AREA(ACRES) =     11.09         PEAK FLOW RATE(CFS) =      15.45

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.49   FLOOD WIDTH(FEET) =   19.95
  FLOW VELOCITY(FEET/SEC.) =   6.63   DEPTH*VELOCITY(FT*FT/SEC) =   3.28
  LONGEST FLOWPATH FROM NODE  20720.00 TO NODE  20722.00 =  1162.21 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020722.0 TO NODE LR020722.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.97
  RAINFALL INTENSITY(INCH/HR) =   2.10
  AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.69
  AREA-AVERAGED Ap =  0.81
  EFFECTIVE STREAM AREA(ACRES) =    11.09
  TOTAL STREAM AREA(ACRES) =    11.09
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.45

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     35.77   8.44    2.595  0.72( 0.54) 0.75    19.3 LR020718.5
      1     34.32   9.41    2.431  0.72( 0.54) 0.75    20.2 LR020718.0
      2     15.45  11.97    2.105  0.69( 0.56) 0.81    11.1 LR020720.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     50.12   8.44    2.595  0.71( 0.54) 0.77    27.2 LR020718.5
      2     49.04   9.41    2.431  0.71( 0.54) 0.77    28.9 LR020718.0
      3     43.86  11.97    2.105  0.70( 0.55) 0.77    31.2 LR020720.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     50.12    Tc(MIN.) =     8.44
  EFFECTIVE AREA(ACRES) =    27.16   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.77
  TOTAL AREA(ACRES) =     31.25
  LONGEST FLOWPATH FROM NODE  20720.00 TO NODE  20722.00 =  1162.21 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020722.0 TO NODE LR020723.0 IS CODE =  92
----------------------------------------------------------------------------
```



```
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   2015.00
  DOWNSTREAM NODE ELEVATION(FEET) =   2000.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   664.99
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.296
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.92      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        5.87      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     59.27
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.81
  AVERAGE FLOW DEPTH(FEET) =   0.73   FLOOD WIDTH(FEET) =   47.43
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   1.91   Tc(MIN.) =  10.35
  SUBAREA AREA(ACRES) =   11.79       SUBAREA RUNOFF(CFS) =   18.33
  EFFECTIVE AREA(ACRES) =   38.95     AREA-AVERAGED Fm(INCH/HR) =   0.55
  AREA-AVERAGED Fp(INCH/HR) =   0.69  AREA-AVERAGED Ap =   0.79
  TOTAL AREA(ACRES) =     43.04         PEAK FLOW RATE(CFS) =      61.16

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.73   FLOOD WIDTH(FEET) =   48.03
  FLOW VELOCITY(FEET/SEC.) =   5.86   DEPTH*VELOCITY(FT*FT/SEC) =   4.29
  LONGEST FLOWPATH FROM NODE  20720.00 TO NODE  20723.00 =  1827.20 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020723.0 TO NODE LR020724.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   2000.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1960.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   791.28
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.107
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        9.77      0.61      1.00    66
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.38      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.62
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.98
```

```
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     68.03
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.29
  AVERAGE FLOW DEPTH(FEET) =   0.68   FLOOD WIDTH(FEET) =   42.21
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   1.59   Tc(MIN.) =  11.94
  SUBAREA AREA(ACRES) =   10.15       SUBAREA RUNOFF(CFS) =   13.72
  EFFECTIVE AREA(ACRES) =   49.10     AREA-AVERAGED Fm(INCH/HR) =   0.56
  AREA-AVERAGED Fp(INCH/HR) =   0.68  AREA-AVERAGED Ap =   0.83
  TOTAL AREA(ACRES) =     53.19         PEAK FLOW RATE(CFS) =      68.27

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.68   FLOOD WIDTH(FEET) =   42.21
  FLOW VELOCITY(FEET/SEC.) =   8.32   DEPTH*VELOCITY(FT*FT/SEC) =   5.68
  LONGEST FLOWPATH FROM NODE  20720.00 TO NODE  20724.00 =  2618.48 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020724.0 TO NODE LR020724.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     68.27  11.94    2.107  0.68( 0.56) 0.83    49.1 LR020718.5
      2     66.18  12.93    2.009  0.68( 0.56) 0.83    50.8 LR020718.0
      3     59.19  15.56    1.798  0.68( 0.56) 0.83    53.2 LR020720.0
  LONGEST FLOWPATH FROM NODE  20720.00 TO NODE  20724.00 =  2618.48 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     60.92  23.55    1.402  0.68( 0.49) 0.73    74.5 LR020700.0
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20724.00 =  5292.93 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    123.13  11.94    2.107  0.68( 0.53) 0.79    86.9 LR020718.5
      2    121.97  12.93    2.009  0.68( 0.53) 0.79    91.7 LR020718.0
      3    116.97  15.56    1.798  0.68( 0.53) 0.78   102.4 LR020720.0
      4    101.15  23.55    1.402  0.68( 0.52) 0.77   127.7 LR020700.0
    TOTAL AREA(ACRES) =    127.66

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      123.13  Tc(MIN.) =   11.942
  EFFECTIVE AREA(ACRES) =     86.86  AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =    127.66
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20724.00 =  5292.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020724.0 TO NODE LR020724.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR020724.0 TO NODE LR020725.0 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1960.00  DOWNSTREAM(FEET) =  1958.00
  FLOW LENGTH(FEET) =    81.40   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  29.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.95
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    123.13
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =  12.02
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20725.00 =  5374.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020725.0 TO NODE LR020725.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020658.0 TO NODE LR020658.0 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20658.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM     Q     Tc      Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.)  (INCH/HR)       (ACRES)    NODE
      1    412.39  15.24  0.74( 0.43) 0.58   329.8 LR020649.0
      2    414.28  21.30  0.74( 0.43) 0.58   433.0 LR020640.0
      3    350.43  31.78  0.74( 0.43) 0.58   525.7 LR020600.0
      4    335.36  33.79  0.74( 0.43) 0.58   534.2 LR020620.0
    TOTAL AREA(ACRES) =   534.20
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20658.00 =  7681.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020658.0 TO NODE LR020658.0 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM     Q     Tc      Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.)  (INCH/HR)       (ACRES)    NODE
      1    412.39  15.24  0.74( 0.43) 0.58   329.8 LR020649.0
      2    414.28  21.30  0.74( 0.43) 0.58   433.0 LR020640.0
      3    350.43  31.78  0.74( 0.43) 0.58   525.7 LR020600.0
      4    335.36  33.79  0.74( 0.43) 0.58   534.2 LR020620.0
    TOTAL AREA(ACRES) =    534.20
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20658.00 =  7681.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020658.0 TO NODE LR020658.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
```

```
==============================================================================

******************************************************************************
  FLOW PROCESS FROM NODE LR020658.0 TO NODE LR020725.0 IS CODE =  63
------------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
==============================================================================
  UPSTREAM ELEVATION(FEET) = 2000.00  DOWNSTREAM ELEVATION(FEET) = 1958.00
  STREET LENGTH(FEET) =   941.91   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.72

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     422.33
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.00
    HALFSTREET FLOOD WIDTH(FEET) =   43.16
    AVERAGE FLOW VELOCITY(FEET/SEC.) =   11.12
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   11.15
  STREET FLOW TRAVEL TIME(MIN.) =   1.41   Tc(MIN.) =  22.72
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.433
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        2.46      0.75      0.50    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.48      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       12.20      0.61      1.00    66
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.32      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.65
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.85
  SUBAREA AREA(ACRES) =   20.46      SUBAREA RUNOFF(CFS) =   16.10
  EFFECTIVE AREA(ACRES) =    453.50    AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.59
  TOTAL AREA(ACRES) =    554.66        PEAK FLOW RATE(CFS) =     414.28
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.00   HALFSTREET FLOOD WIDTH(FEET) =  42.86
  FLOW VELOCITY(FEET/SEC.) = 11.06   DEPTH*VELOCITY(FT*FT/SEC.) =  11.03

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
```



```
        THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.72
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  24.05
  PIPE-FLOW(CFS) =    382.90
  PIPEFLOW TRAVEL TIME(MIN.) =   0.65    Tc(MIN.) =  21.96
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.462
  SUBAREA AREA(ACRES) =   20.46      SUBAREA RUNOFF(CFS) =   16.65
  TOTAL AREA(ACRES) =    554.66        PEAK FLOW RATE(CFS) =    420.51

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   37.61
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.49
    HALFSTREET FLOOD WIDTH(FEET) =   18.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.58
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.72

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    421.38  15.89    1.776  0.73( 0.44) 0.60   350.3 LR020649.0
      2    420.51  21.96    1.462  0.73( 0.43) 0.59   453.5 LR020640.0
      3    355.56  32.35    1.159  0.73( 0.44) 0.59   546.1 LR020600.0
      4    340.16  34.37    1.118  0.73( 0.44) 0.59   554.7 LR020620.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    421.38  Tc(MIN.) =  15.89
  AREA-AVERAGED Fm(INCH/HR) =  0.44  AREA-AVERAGED Fp(INCH/HR) =  0.73
  AREA-AVERAGED Ap =  0.60  EFFECTIVE AREA(ACRES) =    350.26
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20725.00 =  8623.85 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE LR020725.0 TO NODE LR020725.0 IS CODE =  11
------------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
==============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    421.38  15.89    1.776  0.73( 0.44) 0.60   350.3 LR020649.0
      2    420.51  21.96    1.462  0.73( 0.43) 0.59   453.5 LR020640.0
      3    355.56  32.35    1.159  0.73( 0.44) 0.59   546.1 LR020600.0
      4    340.16  34.37    1.118  0.73( 0.44) 0.59   554.7 LR020620.0
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20725.00 =  8623.85 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    123.13  12.02    2.099  0.68( 0.53) 0.79    86.9 LR020718.5
      2    121.97  13.01    2.001  0.68( 0.53) 0.79    91.7 LR020718.0
      3    116.97  15.64    1.793  0.68( 0.53) 0.78   102.4 LR020720.0
      4    101.15  23.63    1.399  0.68( 0.52) 0.77   127.7 LR020700.0
```

```
  LONGEST FLOWPATH FROM NODE  20700.00 TO NODE  20725.00 =  5374.33 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    519.09  12.02    2.099  0.72( 0.46) 0.64   351.9 LR020718.5
      2    525.43  13.01    2.001  0.72( 0.46) 0.64   378.6 LR020718.0
      3    536.98  15.64    1.793  0.72( 0.46) 0.64   447.1 LR020720.0
      4    537.85  15.89    1.776  0.72( 0.46) 0.64   453.4 LR020649.0
      5    524.97  21.96    1.462  0.72( 0.45) 0.63   575.9 LR020640.0
      6    511.19  23.63    1.399  0.72( 0.45) 0.63   596.1 LR020700.0
      7    429.00  32.35    1.159  0.72( 0.45) 0.63   673.8 LR020600.0
      8    408.84  34.37    1.118  0.72( 0.45) 0.63   682.3 LR020620.0
    TOTAL AREA(ACRES) =    682.32

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      537.85  Tc(MIN.) =   15.889
  EFFECTIVE AREA(ACRES) =    453.43  AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.64
  TOTAL AREA(ACRES) =    682.32
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20725.00 =  8623.85 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020725.0 TO NODE LR020725.0 IS CODE =  71
----------------------------------------------------------------------------
  >>>>>PEAK FLOW RATE ESTIMATOR CHANGED TO UNIT-HYDROGRAPH METHOD<<<<<
  >>>>>USING TIME-OF-CONCENTRATION OF LONGEST FLOWPATH<<<<<
============================================================================
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.38;6H= 1.95;24H= 4.02
  S-GRAPH: VALLEY(DEV.)= 77.8%;VALLEY(UNDEV.)/DESERT= 22.2%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.37; LAG(HR) = 0.29; Fm(INCH/HR) = 0.45; Ybar = 0.54
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 1.00; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    682.32
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20725.00 =  8623.85 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0340; Lca/L=0.4,n=.0305; Lca/L=0.5,n=.0280;Lca/L=0.6,n=.0262
  TIME OF PEAK FLOW(HR) = 16.33  RUNOFF VOLUME(AF) =     112.02
  UNIT-HYDROGRAPH METHOD PEAK FLOW RATE(CFS) =    652.20
  TOTAL PEAK FLOW RATE(CFS) =    652.20 (SOURCE FLOW INCLUDED)
  RATIONAL METHOD PEAK FLOW RATE(CFS) =    537.85
   (UPSTREAM NODE PEAK FLOW RATE(CFS) =    537.85)
  PEAK FLOW RATE(CFS) USED =    652.20

****************************************************************************
  FLOW PROCESS FROM NODE LR020725.0 TO NODE LR020725.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020725.0 TO NODE LR020726.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
```



```
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1958.00  DOWNSTREAM(FEET) =   1872.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1421.01   CHANNEL SLOPE =  0.0605
  CHANNEL BASE(FEET) =    6.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    652.20
  FLOW VELOCITY(FEET/SEC.) =  30.39   FLOW DEPTH(FEET) =   2.10
  TRAVEL TIME(MIN.) =   0.78   Tc(MIN.) =  22.74
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20726.00 = 10044.86 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020726.0 TO NODE LR020726.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  22.74
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.432
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        3.96      0.75      0.50    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.31      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       14.46      0.61      1.00    66
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.98      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.65
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.85
  SUBAREA AREA(ACRES) =   23.71
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.38;6H= 1.95;24H= 4.02
  S-GRAPH: VALLEY(DEV.)= 76.5%;VALLEY(UNDEV.)/DESERT= 23.5%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.38; LAG(HR) = 0.30; Fm(INCH/HR) = 0.46; Ybar = 0.55
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 1.00; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    706.03
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20726.00 = 10044.86 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0324; Lca/L=0.4,n=.0290; Lca/L=0.5,n=.0267;Lca/L=0.6,n=.0249
  TIME OF PEAK FLOW(HR) = 16.33  RUNOFF VOLUME(AF) =     115.07
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    651.67
  TOTAL AREA(ACRES) =    706.03       PEAK FLOW RATE(CFS) =     652.20
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

****************************************************************************
  FLOW PROCESS FROM NODE LR020726.0 TO NODE LR020727.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1872.00  DOWNSTREAM(FEET) =   1835.00
```

```
  CHANNEL LENGTH THRU SUBAREA(FEET) =   760.88   CHANNEL SLOPE =  0.0486
  CHANNEL BASE(FEET) =    6.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    652.20
  FLOW VELOCITY(FEET/SEC.) =  28.09   FLOW DEPTH(FEET) =   2.22
  TRAVEL TIME(MIN.) =   0.45   Tc(MIN.) =  23.19
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20727.00 = 10805.74 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020727.0 TO NODE LR020727.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  23.19
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.415
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        1.92      0.75      0.50    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.30      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       12.35      0.61      1.00    66
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.34      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.66
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.86
  SUBAREA AREA(ACRES) =   20.91
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.38;6H= 1.95;24H= 4.02
  S-GRAPH: VALLEY(DEV.)= 75.4%;VALLEY(UNDEV.)/DESERT= 24.6%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.39; LAG(HR) = 0.31; Fm(INCH/HR) = 0.46; Ybar = 0.55
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 1.00; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    726.94
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20727.00 = 10805.74 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0315; Lca/L=0.4,n=.0282; Lca/L=0.5,n=.0259;Lca/L=0.6,n=.0242
  TIME OF PEAK FLOW(HR) = 16.33  RUNOFF VOLUME(AF) =     117.68
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    655.88
  TOTAL AREA(ACRES) =    726.94       PEAK FLOW RATE(CFS) =     655.88

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

****************************************************************************
  FLOW PROCESS FROM NODE LR020727.0 TO NODE LR020728.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1835.00  DOWNSTREAM(FEET) =   1820.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   832.56   CHANNEL SLOPE =  0.0180
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   4.00
```



```
  CHANNEL FLOW THRU SUBAREA(CFS) =    655.88
  FLOW VELOCITY(FEET/SEC.) =  19.22   FLOW DEPTH(FEET) =   2.59
  TRAVEL TIME(MIN.) =   0.72   Tc(MIN.) =  23.91
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20728.00 = 11638.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020728.0 TO NODE LR020728.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  23.91
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.389
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        3.88      0.75      0.50    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       12.91      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        6.79      0.75      0.60    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.42      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.73
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA AREA(ACRES) =   26.00
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.38;6H= 1.95;24H= 4.02
  S-GRAPH: VALLEY(DEV.)= 76.0%;VALLEY(UNDEV.)/DESERT= 24.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.40; LAG(HR) = 0.32; Fm(INCH/HR) = 0.46; Ybar = 0.55
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    752.94
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20728.00 = 11638.30 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0305; Lca/L=0.4,n=.0273; Lca/L=0.5,n=.0251;Lca/L=0.6,n=.0234
  TIME OF PEAK FLOW(HR) = 16.33  RUNOFF VOLUME(AF) =     121.60
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    657.12
  TOTAL AREA(ACRES) =    752.94       PEAK FLOW RATE(CFS) =     657.12

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

****************************************************************************
  FLOW PROCESS FROM NODE LR020728.0 TO NODE LR020748.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1820.00  DOWNSTREAM(FEET) =   1815.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   259.80   CHANNEL SLOPE =  0.0192
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   4.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    657.12
  FLOW VELOCITY(FEET/SEC.) =  19.72   FLOW DEPTH(FEET) =   2.55
  TRAVEL TIME(MIN.) =   0.22   Tc(MIN.) =  24.13
```

```
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20748.00 = 11898.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020748.0 TO NODE LR020748.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  24.13
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.382
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.70      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =    0.70
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.38;6H= 1.95;24H= 4.02
  S-GRAPH: VALLEY(DEV.)= 76.0%;VALLEY(UNDEV.)/DESERT= 24.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.40; LAG(HR) = 0.32; Fm(INCH/HR) = 0.46; Ybar = 0.55
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    753.64
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20748.00 = 11898.10 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0302; Lca/L=0.4,n=.0271; Lca/L=0.5,n=.0249;Lca/L=0.6,n=.0232
  TIME OF PEAK FLOW(HR) = 16.33  RUNOFF VOLUME(AF) =     121.74
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    651.41
  TOTAL AREA(ACRES) =    753.64       PEAK FLOW RATE(CFS) =     657.12
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

****************************************************************************
  FLOW PROCESS FROM NODE LR020748.0 TO NODE LR020748.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =     657.12    Tc(MIN.) =  24.13
  AREA-AVERAGED Fm(INCH/HR) =  0.46   Ybar = 0.55
  TOTAL AREA(ACRES) =     753.64

****************************************************************************
  FLOW PROCESS FROM NODE LR020730.0 TO NODE LR020731.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   428.13
  ELEVATION DATA: UPSTREAM(FEET) =   1955.00  DOWNSTREAM(FEET) =   1935.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
```



```
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.104
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.659
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.49      0.61      1.00    66   14.71
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        2.96      0.75      0.50    56    8.10
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.68
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA RUNOFF(CFS) =      8.83
  TOTAL AREA(ACRES) =      4.45   PEAK FLOW RATE(CFS) =      8.83

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

****************************************************************************
  FLOW PROCESS FROM NODE LR020731.0 TO NODE LR020732.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1935.00  DOWNSTREAM(FEET) =   1890.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   975.64   CHANNEL SLOPE =  0.0461
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.50
  CHANNEL FLOW THRU SUBAREA(CFS) =      8.83
  FLOW VELOCITY(FEET/SEC.) =   8.35   FLOW DEPTH(FEET) =   0.29
  TRAVEL TIME(MIN.) =   1.95   Tc(MIN.) =  10.05
  LONGEST FLOWPATH FROM NODE  20730.00 TO NODE  20732.00 =  1403.77 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020732.0 TO NODE LR020732.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  10.05
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.337
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        5.96      0.61      1.00    66
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        5.56      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.66
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.76
  SUBAREA AREA(ACRES) =   11.52      SUBAREA RUNOFF(CFS) =   19.06
  EFFECTIVE AREA(ACRES) =     15.97   AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =     15.97       PEAK FLOW RATE(CFS) =      26.60

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

****************************************************************************
  FLOW PROCESS FROM NODE LR020732.0 TO NODE LR020733.0 IS CODE =  54
```

```
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1890.00  DOWNSTREAM(FEET) =   1845.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   862.28   CHANNEL SLOPE =  0.0522
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     26.60
  FLOW VELOCITY(FEET/SEC.) =  12.33   FLOW DEPTH(FEET) =   0.53
  TRAVEL TIME(MIN.) =   1.17   Tc(MIN.) =  11.22
  LONGEST FLOWPATH FROM NODE  20730.00 TO NODE  20733.00 =  2266.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020733.0 TO NODE LR020733.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  11.22
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.188
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        0.59      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        7.70      0.61      1.00    66
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        5.46      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.65
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.79
  SUBAREA AREA(ACRES) =   13.75      SUBAREA RUNOFF(CFS) =   20.71
  EFFECTIVE AREA(ACRES) =     29.72   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.76
  TOTAL AREA(ACRES) =     29.72       PEAK FLOW RATE(CFS) =      45.17

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

****************************************************************************
  FLOW PROCESS FROM NODE LR020733.0 TO NODE LR020748.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1845.00  DOWNSTREAM(FEET) =   1815.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   848.95   CHANNEL SLOPE =  0.0353
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     45.17
  FLOW VELOCITY(FEET/SEC.) =  12.51   FLOW DEPTH(FEET) =   0.79
  TRAVEL TIME(MIN.) =   1.13   Tc(MIN.) =  12.35
  LONGEST FLOWPATH FROM NODE  20730.00 TO NODE  20748.00 =  3115.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020748.0 TO NODE LR020748.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
```



```
============================================================================
  MAINLINE Tc(MIN) =  12.35
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.065
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       41.76      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.84      0.75      0.60    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        4.95      0.75      0.50    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       17.32      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.70
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.76
  SUBAREA AREA(ACRES) =   64.87      SUBAREA RUNOFF(CFS) =   89.33
  EFFECTIVE AREA(ACRES) =     94.59   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.69  AREA-AVERAGED Ap =  0.76
  TOTAL AREA(ACRES) =     94.59       PEAK FLOW RATE(CFS) =     131.23

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

****************************************************************************
  FLOW PROCESS FROM NODE LR020748.0 TO NODE LR020748.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  12.35
  RAINFALL INTENSITY(INCH/HR) =   2.07
  AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.69
  AREA-AVERAGED Ap =  0.76
  EFFECTIVE STREAM AREA(ACRES) =    94.59
  TOTAL STREAM AREA(ACRES) =    94.59
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    131.23

****************************************************************************
  FLOW PROCESS FROM NODE LR020740.0 TO NODE LR020741.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   714.40
  ELEVATION DATA: UPSTREAM(FEET) =   2095.00  DOWNSTREAM(FEET) =   2070.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.865
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.116
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        7.73      0.75      0.70    56   11.86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
```

```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA RUNOFF(CFS) =     11.08
  TOTAL AREA(ACRES) =      7.73   PEAK FLOW RATE(CFS) =     11.08

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

****************************************************************************
  FLOW PROCESS FROM NODE LR020741.0 TO NODE LR020742.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2070.00  DOWNSTREAM(FEET) =   2035.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   418.24   CHANNEL SLOPE =  0.0837
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     11.08
  FLOW VELOCITY(FEET/SEC.) =   5.34   FLOW DEPTH(FEET) =   0.91
  TRAVEL TIME(MIN.) =   1.31   Tc(MIN.) =  13.17
  LONGEST FLOWPATH FROM NODE  20740.00 TO NODE  20742.00 =  1132.64 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020742.0 TO NODE LR020742.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  13.17
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.987
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.91      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =    4.91      SUBAREA RUNOFF(CFS) =    6.47
  EFFECTIVE AREA(ACRES) =     12.64   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     12.64       PEAK FLOW RATE(CFS) =      16.65

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

****************************************************************************
  FLOW PROCESS FROM NODE LR020742.0 TO NODE LR020743.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2035.00  DOWNSTREAM(FEET) =   2020.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   525.35   CHANNEL SLOPE =  0.0286
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     16.65
  FLOW VELOCITY(FEET/SEC.) =   3.98   FLOW DEPTH(FEET) =   1.29
  TRAVEL TIME(MIN.) =   2.20   Tc(MIN.) =  15.37
  LONGEST FLOWPATH FROM NODE  20740.00 TO NODE  20743.00 =  1657.99 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR020743.0 TO NODE LR020743.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  15.37
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.811
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        7.69      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =    7.69      SUBAREA RUNOFF(CFS) =    8.91
  EFFECTIVE AREA(ACRES) =     20.33   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     20.33       PEAK FLOW RATE(CFS) =      23.56

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

****************************************************************************
  FLOW PROCESS FROM NODE LR020743.0 TO NODE LR020744.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2020.00  DOWNSTREAM(FEET) =   1970.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   496.30   CHANNEL SLOPE =  0.1007
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     23.56
  FLOW VELOCITY(FEET/SEC.) =   6.95   FLOW DEPTH(FEET) =   1.16
  TRAVEL TIME(MIN.) =   1.19   Tc(MIN.) =  16.56
  LONGEST FLOWPATH FROM NODE  20740.00 TO NODE  20744.00 =  2154.29 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020744.0 TO NODE LR020744.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  16.56
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.732
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.02      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =    6.02      SUBAREA RUNOFF(CFS) =    6.55
  EFFECTIVE AREA(ACRES) =     26.35   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     26.35       PEAK FLOW RATE(CFS) =      28.65

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
```

```
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

****************************************************************************
  FLOW PROCESS FROM NODE LR020744.0 TO NODE LR020745.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1970.00  DOWNSTREAM(FEET) =   1920.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   511.30   CHANNEL SLOPE =  0.0978
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     28.65
  FLOW VELOCITY(FEET/SEC.) =   7.20   FLOW DEPTH(FEET) =   1.26
  TRAVEL TIME(MIN.) =   1.18   Tc(MIN.) =  17.75
  LONGEST FLOWPATH FROM NODE  20740.00 TO NODE  20745.00 =  2665.59 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020745.0 TO NODE LR020745.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.75
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.662
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.61      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.17      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =    6.78      SUBAREA RUNOFF(CFS) =    6.96
  EFFECTIVE AREA(ACRES) =     33.13   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     33.13       PEAK FLOW RATE(CFS) =      33.94

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

****************************************************************************
  FLOW PROCESS FROM NODE LR020745.0 TO NODE LR020746.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1920.00  DOWNSTREAM(FEET) =   1895.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   558.91   CHANNEL SLOPE =  0.0447
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     33.94
  FLOW VELOCITY(FEET/SEC.) =   3.71   FLOW DEPTH(FEET) =   0.78
  TRAVEL TIME(MIN.) =   2.51   Tc(MIN.) =  20.26
  LONGEST FLOWPATH FROM NODE  20740.00 TO NODE  20746.00 =  3224.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020746.0 TO NODE LR020746.0 IS CODE =  81
```



```
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  20.26
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.535
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.76      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        8.95      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    9.71      SUBAREA RUNOFF(CFS) =    8.89
  EFFECTIVE AREA(ACRES) =     42.84   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     42.84       PEAK FLOW RATE(CFS) =      39.05

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

****************************************************************************
  FLOW PROCESS FROM NODE LR020746.0 TO NODE LR020747.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1895.00  DOWNSTREAM(FEET) =   1840.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   573.14   CHANNEL SLOPE =  0.0960
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     39.05
  FLOW VELOCITY(FEET/SEC.) =   5.13   FLOW DEPTH(FEET) =   0.71
  TRAVEL TIME(MIN.) =   1.86   Tc(MIN.) =  22.12
  LONGEST FLOWPATH FROM NODE  20740.00 TO NODE  20747.00 =  3797.64 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020747.0 TO NODE LR020747.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  22.12
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.456
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.57      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        9.61      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =   10.18      SUBAREA RUNOFF(CFS) =    8.58
  EFFECTIVE AREA(ACRES) =     53.02   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     53.02       PEAK FLOW RATE(CFS) =      44.59
```

```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

****************************************************************************
  FLOW PROCESS FROM NODE LR020747.0 TO NODE LR020748.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1840.00  DOWNSTREAM(FEET) =   1815.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   752.37   CHANNEL SLOPE =  0.0332
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     44.59
  FLOW VELOCITY(FEET/SEC.) =   3.57   FLOW DEPTH(FEET) =   0.91
  TRAVEL TIME(MIN.) =   3.51   Tc(MIN.) =  25.63
  LONGEST FLOWPATH FROM NODE  20740.00 TO NODE  20748.00 =  4550.01 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020748.0 TO NODE LR020748.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  25.63
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.333
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        8.54      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.23      0.75      0.60    56
  PUBLIC PARK                B        0.78      0.75      0.85    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        1.16      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA AREA(ACRES) =   12.71      SUBAREA RUNOFF(CFS) =    9.48
  EFFECTIVE AREA(ACRES) =     65.73   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     65.73       PEAK FLOW RATE(CFS) =      48.19

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

****************************************************************************
  FLOW PROCESS FROM NODE LR020748.0 TO NODE LR020748.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =  25.63
  RAINFALL INTENSITY(INCH/HR) =   1.33
  AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.69
```



```
  EFFECTIVE STREAM AREA(ACRES) =    65.73
  TOTAL STREAM AREA(ACRES) =    65.73
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     48.19
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1       657.12   24.13     753.64  LR020620.0
     2       131.23   12.35      94.59  LR020730.0
     3        48.19   25.63      65.73  LR020740.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.38;6H= 1.95;24H= 4.02
  S-GRAPH: VALLEY(DEV.)= 76.6%;VALLEY(UNDEV.)/DESERT= 23.4%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.40; LAG(HR) = 0.32; Fm(INCH/HR) = 0.47; Ybar = 0.56
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    913.96
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20748.00 = 11898.10 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0302; Lca/L=0.4,n=.0271; Lca/L=0.5,n=.0249;Lca/L=0.6,n=.0232
  TIME OF PEAK FLOW(HR) = 16.33  RUNOFF VOLUME(AF) =     144.13
  PEAK FLOW RATE(CFS) =    775.68

****************************************************************************
  FLOW PROCESS FROM NODE LR020748.0 TO NODE LR020749.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1815.00  DOWNSTREAM(FEET) =   1700.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2764.03   CHANNEL SLOPE =  0.0416
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   4.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    775.68
  FLOW VELOCITY(FEET/SEC.) =  27.27   FLOW DEPTH(FEET) =   2.27
  TRAVEL TIME(MIN.) =   1.69   Tc(MIN.) =  25.82
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20749.00 = 14662.13 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020749.0 TO NODE LR020749.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  25.82
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.327
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       46.16      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        9.13      0.75      0.60    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B       13.04      0.75      0.50    56
  PUBLIC PARK                B       14.63      0.75      0.85    56
```

```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   82.96
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.38;6H= 1.95;24H= 4.02
  S-GRAPH: VALLEY(DEV.)= 78.6%;VALLEY(UNDEV.)/DESERT= 21.4%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.43; LAG(HR) = 0.34; Fm(INCH/HR) = 0.47; Ybar = 0.57
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    996.92
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20749.00 = 14662.13 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0279; Lca/L=0.4,n=.0250; Lca/L=0.5,n=.0230;Lca/L=0.6,n=.0214
  TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     156.04
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    830.54
  TOTAL AREA(ACRES) =    996.92       PEAK FLOW RATE(CFS) =     830.54

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

****************************************************************************
  FLOW PROCESS FROM NODE LR020749.0 TO NODE LR020763.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1700.00  DOWNSTREAM(FEET) =   1600.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3167.14   CHANNEL SLOPE =  0.0316
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   4.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    830.54
  FLOW VELOCITY(FEET/SEC.) =  25.16   FLOW DEPTH(FEET) =   2.53
  TRAVEL TIME(MIN.) =   2.10   Tc(MIN.) =  27.92
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20763.00 = 17829.27 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020763.0 TO NODE LR020763.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  27.92
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.266
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B       17.57      0.75      0.50    56
  COMMERCIAL                 B        0.79      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       11.86      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       51.53      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.64
  SUBAREA AREA(ACRES) =   81.75
  UNIT-HYDROGRAPH DATA:
```



```
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.38;6H= 1.95;24H= 4.03
  S-GRAPH: VALLEY(DEV.)= 80.2%;VALLEY(UNDEV.)/DESERT= 19.8%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.47; LAG(HR) = 0.37; Fm(INCH/HR) = 0.47; Ybar = 0.57
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.95; 30M = 0.95; 1HR = 0.95;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1078.67
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20763.00 = 17829.27 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0259; Lca/L=0.4,n=.0232; Lca/L=0.5,n=.0213;Lca/L=0.6,n=.0199
  TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     168.74
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    851.30
  TOTAL AREA(ACRES) =   1078.67       PEAK FLOW RATE(CFS) =     851.30

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

****************************************************************************
  FLOW PROCESS FROM NODE LR020763.0 TO NODE LR020763.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =     851.30    Tc(MIN.) =  27.92
  AREA-AVERAGED Fm(INCH/HR) =  0.47   Ybar = 0.57
  TOTAL AREA(ACRES) =    1078.67

****************************************************************************
  FLOW PROCESS FROM NODE LR020750.0 TO NODE LR020751.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   910.09
  ELEVATION DATA: UPSTREAM(FEET) =   2180.00  DOWNSTREAM(FEET) =   2150.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.443
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.056
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.98      0.75      0.70    56   13.23
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.60      0.75      0.60    56   12.44
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA RUNOFF(CFS) =     12.01
  TOTAL AREA(ACRES) =      8.58   PEAK FLOW RATE(CFS) =     12.01

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

****************************************************************************
  FLOW PROCESS FROM NODE LR020751.0 TO NODE LR020752.0 IS CODE =  54
```

```
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2150.00  DOWNSTREAM(FEET) =   2120.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   482.67   CHANNEL SLOPE =  0.0622
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     12.01
  FLOW VELOCITY(FEET/SEC.) =   4.91   FLOW DEPTH(FEET) =   0.99
  TRAVEL TIME(MIN.) =   1.64   Tc(MIN.) =  14.08
  LONGEST FLOWPATH FROM NODE  20750.00 TO NODE  20752.00 =  1392.76 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020752.0 TO NODE LR020752.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  14.08
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.909
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.44      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.07      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    4.51      SUBAREA RUNOFF(CFS) =    5.65
  EFFECTIVE AREA(ACRES) =     13.09   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     13.09       PEAK FLOW RATE(CFS) =      16.53

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

****************************************************************************
  FLOW PROCESS FROM NODE LR020752.0 TO NODE LR020753.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2120.00  DOWNSTREAM ELEVATION(FEET) = 2100.00
  STREET LENGTH(FEET) =   408.17   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      31.41
```



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    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.46
    HALFSTREET FLOOD WIDTH(FEET) =   16.48
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.54
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.53
  STREET FLOW TRAVEL TIME(MIN.) =   1.23   Tc(MIN.) =  15.31
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.816
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.61      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       21.76      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =   25.37      SUBAREA RUNOFF(CFS) =   29.74
  EFFECTIVE AREA(ACRES) =     38.46    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     38.46        PEAK FLOW RATE(CFS) =      45.17

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.50   HALFSTREET FLOOD WIDTH(FEET) =  18.14
  FLOW VELOCITY(FEET/SEC.) =  6.18   DEPTH*VELOCITY(FT*FT/SEC.) =   3.11
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  408.2 FT WITH ELEVATION-DROP =  20.0 FT, IS   48.0 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20753.00
  LONGEST FLOWPATH FROM NODE  20750.00 TO NODE  20753.00 =  1800.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020753.0 TO NODE LR020754.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2100.00  DOWNSTREAM ELEVATION(FEET) = 2060.00
  STREET LENGTH(FEET) =   602.59   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.65

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      51.66
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.50
    HALFSTREET FLOOD WIDTH(FEET) =   18.01
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.15
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    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.58
  STREET FLOW TRAVEL TIME(MIN.) =   1.40   Tc(MIN.) =  16.71
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.723
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        9.79      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.89      0.75      0.60    56
  SCHOOL                     B        0.21      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   11.89      SUBAREA RUNOFF(CFS) =   12.97
  EFFECTIVE AREA(ACRES) =     50.35    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     50.35        PEAK FLOW RATE(CFS) =      54.92

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.51   HALFSTREET FLOOD WIDTH(FEET) =  18.38
  FLOW VELOCITY(FEET/SEC.) =  7.33   DEPTH*VELOCITY(FT*FT/SEC.) =   3.72
  LONGEST FLOWPATH FROM NODE  20750.00 TO NODE  20754.00 =  2403.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020754.0 TO NODE LR020755.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2060.00  DOWNSTREAM ELEVATION(FEET) = 2040.00
  STREET LENGTH(FEET) =   704.58   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.82

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      75.25
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.62
    HALFSTREET FLOOD WIDTH(FEET) =   24.06
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.11
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.80
  STREET FLOW TRAVEL TIME(MIN.) =   1.92   Tc(MIN.) =  18.63
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.614
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```



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  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       31.15      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        6.15      0.75      0.60    56
  SCHOOL                     B        3.45      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   40.75      SUBAREA RUNOFF(CFS) =   40.62
  EFFECTIVE AREA(ACRES) =     91.10    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     91.10        PEAK FLOW RATE(CFS) =      90.61

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.66   HALFSTREET FLOOD WIDTH(FEET) =  25.77
  FLOW VELOCITY(FEET/SEC.) =  6.47   DEPTH*VELOCITY(FT*FT/SEC.) =   4.24
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  704.6 FT WITH ELEVATION-DROP =  20.0 FT, IS   60.2 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20755.00
  LONGEST FLOWPATH FROM NODE  20750.00 TO NODE  20755.00 =  3108.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020755.0 TO NODE LR020756.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2040.00  DOWNSTREAM ELEVATION(FEET) = 2000.00
  STREET LENGTH(FEET) =   785.85   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.69

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      96.02
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.61
    HALFSTREET FLOOD WIDTH(FEET) =   23.57
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.11
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.96
  STREET FLOW TRAVEL TIME(MIN.) =   1.62   Tc(MIN.) =  20.25
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.535
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        9.12      0.75      0.70    56
  RESIDENTIAL
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"3-4 DWELLINGS/ACRE"       B        2.57      0.75      0.60    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
SUBAREA AREA(ACRES) =   11.69      SUBAREA RUNOFF(CFS) =   10.82
EFFECTIVE AREA(ACRES) =    102.79    AREA-AVERAGED Fm(INCH/HR) =  0.51
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
TOTAL AREA(ACRES) =    102.79        PEAK FLOW RATE(CFS) =      94.99

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.61   HALFSTREET FLOOD WIDTH(FEET) =  23.51
FLOW VELOCITY(FEET/SEC.) =  8.06   DEPTH*VELOCITY(FT*FT/SEC.) =   4.92
LONGEST FLOWPATH FROM NODE  20750.00 TO NODE  20756.00 =  3893.95 FEET.

****************************************************************************
FLOW PROCESS FROM NODE LR020756.0 TO NODE LR020757.0 IS CODE =  63
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 2000.00  DOWNSTREAM ELEVATION(FEET) = 1950.00
STREET LENGTH(FEET) =   840.67   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.67

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      99.59
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.61
  HALFSTREET FLOOD WIDTH(FEET) =   23.26
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.62
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.22
STREET FLOW TRAVEL TIME(MIN.) =   1.63   Tc(MIN.) =  21.87
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.466
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"2 DWELLINGS/ACRE"         B        8.65      0.75      0.70    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        2.04      0.75      0.60    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
SUBAREA AREA(ACRES) =   10.69      SUBAREA RUNOFF(CFS) =    9.20
EFFECTIVE AREA(ACRES) =    113.48    AREA-AVERAGED Fm(INCH/HR) =  0.51
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
TOTAL AREA(ACRES) =    113.48        PEAK FLOW RATE(CFS) =      97.76
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SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.60   HALFSTREET FLOOD WIDTH(FEET) =  23.08
FLOW VELOCITY(FEET/SEC.) =  8.59   DEPTH*VELOCITY(FT*FT/SEC.) =   5.17
LONGEST FLOWPATH FROM NODE  20750.00 TO NODE  20757.00 =  4734.62 FEET.

****************************************************************************
FLOW PROCESS FROM NODE LR020757.0 TO NODE LR020758.0 IS CODE =  63
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 1950.00  DOWNSTREAM ELEVATION(FEET) = 1920.00
STREET LENGTH(FEET) =   946.77   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.79

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     122.34
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.71
  HALFSTREET FLOOD WIDTH(FEET) =   28.33
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.29
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.15
STREET FLOW TRAVEL TIME(MIN.) =   2.16   Tc(MIN.) =  24.04
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.385
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"2 DWELLINGS/ACRE"         B       50.96      0.75      0.70    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B       11.45      0.75      0.60    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
SUBAREA AREA(ACRES) =   62.41      SUBAREA RUNOFF(CFS) =   49.15
EFFECTIVE AREA(ACRES) =    175.89    AREA-AVERAGED Fm(INCH/HR) =  0.51
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
TOTAL AREA(ACRES) =    175.89        PEAK FLOW RATE(CFS) =     138.67

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.74   HALFSTREET FLOOD WIDTH(FEET) =  29.79
FLOW VELOCITY(FEET/SEC.) =  7.50   DEPTH*VELOCITY(FT*FT/SEC.) =   5.52
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  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  946.8 FT WITH ELEVATION-DROP =  30.0 FT, IS   85.2 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20758.00
  LONGEST FLOWPATH FROM NODE  20750.00 TO NODE  20758.00 =  5681.39 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020758.0 TO NODE LR020759.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1920.00  DOWNSTREAM ELEVATION(FEET) = 1875.00
  STREET LENGTH(FEET) =  1200.03   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.76

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     146.45
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.73
    HALFSTREET FLOOD WIDTH(FEET) =   29.43
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.11
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.91
  STREET FLOW TRAVEL TIME(MIN.) =   2.47   Tc(MIN.) =  26.50
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.306
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       18.41      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.34      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   21.75      SUBAREA RUNOFF(CFS) =   15.54
  EFFECTIVE AREA(ACRES) =    197.64    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    197.64        PEAK FLOW RATE(CFS) =     141.74

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.72   HALFSTREET FLOOD WIDTH(FEET) =  29.06
  FLOW VELOCITY(FEET/SEC.) =  8.04   DEPTH*VELOCITY(FT*FT/SEC.) =   5.80
  LONGEST FLOWPATH FROM NODE  20750.00 TO NODE  20759.00 =  6881.42 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020759.0 TO NODE LR020760.0 IS CODE =  42
```



```
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1875.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1845.00
  FLOW LENGTH(FEET) =  1440.55   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  57.0 INCH PIPE IS  26.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.83
  PIPE-FLOW(CFS) =    141.74
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.35    Tc(MIN.) =  27.85
  LONGEST FLOWPATH FROM NODE  20750.00 TO NODE  20760.00 =  8321.97 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020760.0 TO NODE LR020760.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  27.85
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.268
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       47.33      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        8.18      0.75      0.60    56
  PUBLIC PARK                B        1.84      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =   57.35      SUBAREA RUNOFF(CFS) =   38.78
  EFFECTIVE AREA(ACRES) =    254.99   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    254.99       PEAK FLOW RATE(CFS) =     173.72

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

****************************************************************************
  FLOW PROCESS FROM NODE LR020760.0 TO NODE LR020761.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1845.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1770.00
  FLOW LENGTH(FEET) =  1840.39   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  57.0 INCH PIPE IS  24.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  24.09
  PIPE-FLOW(CFS) =    173.72
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.27    Tc(MIN.) =  29.12
  LONGEST FLOWPATH FROM NODE  20750.00 TO NODE  20761.00 = 10162.36 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR020761.0 TO NODE LR020761.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  29.12
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.234
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       56.58      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       12.66      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   69.24      SUBAREA RUNOFF(CFS) =   45.14
  EFFECTIVE AREA(ACRES) =    324.23   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    324.23       PEAK FLOW RATE(CFS) =     211.16

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

****************************************************************************
  FLOW PROCESS FROM NODE LR020761.0 TO NODE LR020762.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1770.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1740.00
  FLOW LENGTH(FEET) =  1572.80   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  33.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.05
  PIPE-FLOW(CFS) =    211.16
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.46    Tc(MIN.) =  30.59
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.199
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        7.27      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       33.52      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   40.79      SUBAREA RUNOFF(CFS) =   25.27
  EFFECTIVE AREA(ACRES) =    365.02    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    365.02        PEAK FLOW RATE(CFS) =    225.97

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03
```



```
  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 26.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   14.82
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.45
    HALFSTREET FLOOD WIDTH(FEET) =   14.43
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.26
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.46
  LONGEST FLOWPATH FROM NODE  20750.00 TO NODE  20762.00 = 11735.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020762.0 TO NODE LR020763.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1740.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1600.00
  FLOW LENGTH(FEET) =  1727.01   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  22.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  33.15
  PIPE-FLOW(CFS) =    225.97
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.87    Tc(MIN.) =  31.46
  LONGEST FLOWPATH FROM NODE  20750.00 TO NODE  20763.00 = 13462.17 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020763.0 TO NODE LR020763.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  31.46
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.179
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B       19.08      0.75      0.50    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B      133.50      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       16.16      0.75      0.60    56
  COMMERCIAL                 B       11.70      0.75      0.10    56
  MOBILE HOME PARK           B        5.20      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.62
```

```
  SUBAREA AREA(ACRES) =  185.64      SUBAREA RUNOFF(CFS) =  119.39
  EFFECTIVE AREA(ACRES) =    550.66   AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.66
  TOTAL AREA(ACRES) =    550.66       PEAK FLOW RATE(CFS) =     338.80

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

****************************************************************************
  FLOW PROCESS FROM NODE LR020763.0 TO NODE LR020763.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  31.46
  RAINFALL INTENSITY(INCH/HR) =   1.18
  AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.66
  EFFECTIVE STREAM AREA(ACRES) =   550.66
  TOTAL STREAM AREA(ACRES) =   550.66
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    338.80
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1       851.30   27.92     1078.67  LR020620.0
     2       338.80   31.46      550.66  LR020750.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.38;6H= 1.95;24H= 4.03
  S-GRAPH: VALLEY(DEV.)= 86.9%;VALLEY(UNDEV.)/DESERT= 13.1%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.47; LAG(HR) = 0.37; Fm(INCH/HR) = 0.48; Ybar = 0.57
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.93; 30M = 0.93; 1HR = 0.93;
  3HR = 0.99; 6HR = 0.99; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1629.33
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20763.00 = 17829.27 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0259; Lca/L=0.4,n=.0232; Lca/L=0.5,n=.0213;Lca/L=0.6,n=.0199
  TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     250.35
  PEAK FLOW RATE(CFS) =   1251.00

****************************************************************************
  FLOW PROCESS FROM NODE LR020763.0 TO NODE LR020764.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1600.00  DOWNSTREAM(FEET) =   1510.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3292.21   CHANNEL SLOPE =  0.0273
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   1251.00
  FLOW VELOCITY(FEET/SEC.) =  26.32   FLOW DEPTH(FEET) =   2.98
```



```
  TRAVEL TIME(MIN.) =   2.08   Tc(MIN.) =  30.00
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20764.00 = 21121.48 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020764.0 TO NODE LR020764.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  30.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.213
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       27.93      0.75       0.60    56
  MOBILE HOME PARK           B        2.86      0.75       0.25    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       36.04      0.75       0.70    56
  PUBLIC PARK                B        0.07      0.75       0.85    56
  COMMERCIAL                 B        0.16      0.75       0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.64
  SUBAREA AREA(ACRES) =   67.06
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.38;6H= 1.95;24H= 4.03
  S-GRAPH: VALLEY(DEV.)= 87.4%;VALLEY(UNDEV.)/DESERT= 12.6%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.50; LAG(HR) = 0.40; Fm(INCH/HR) = 0.48; Ybar = 0.57
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.92; 30M = 0.92; 1HR = 0.92;
  3HR = 0.99; 6HR = 0.99; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1696.39
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20764.00 = 21121.48 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0244; Lca/L=0.4,n=.0218; Lca/L=0.5,n=.0201;Lca/L=0.6,n=.0187
  TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     260.64
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1209.11
  TOTAL AREA(ACRES) =   1696.39       PEAK FLOW RATE(CFS) =    1251.00
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.38; 6HR = 1.95; 24HR = 4.03

****************************************************************************
  FLOW PROCESS FROM NODE LR020764.0 TO NODE LR020764.0 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20764.DNA
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =   1696.39  TC(MIN.) =     30.00
  AREA-AVERAGED Fm(INCH/HR)=  0.48   Ybar =  0.57
  PEAK FLOW RATE(CFS)   =   1251.00
============================================================================
============================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
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             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                          San Bernardino County
                    Transportation/ Flood Control Department

                          Water Resources Division

  ************************ DESCRIPTION OF STUDY *************************
 * LR0208ZZ                                                             *
 * 10- Year Storm                                                       *
 *                                                                      *
  ************************************************************************

   FILE NAME: LR0208ZZ.Z10
   TIME/DATE OF STUDY: 09:58 02/22/2006
 ========================================================================
   USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
 ========================================================================
                     --*TIME-OF-CONCENTRATION MODEL*--

   USER SPECIFIED STORM EVENT(YEAR) =   10.00
   SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
   SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
   *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

   SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
   USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 0.8000

   *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

   *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
      HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
      WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
 NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
 ===  =====  =========  =================  ======  ===== ====== ===== =======
   1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
   2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
   3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
   4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
   5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
   6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
   7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
   8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
   9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
```



```
  17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180

   GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
     1. Relative Flow-Depth =  0.20 FEET
        as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
     2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
    *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
     OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
    *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

   UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
     WATERSHED LAG = 0.80 * Tc
     USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
     1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
     FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
     PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
     SIERRA MADRE DEPTH-AREA FACTORS USED.
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


 ************************************************************************
   FLOW PROCESS FROM NODE LR020800.0 TO NODE LR020800.5 IS CODE =  21
 ------------------------------------------------------------------------
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
 ========================================================================
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   706.90
   ELEVATION DATA: UPSTREAM(FEET) =   2210.00  DOWNSTREAM(FEET) =   2170.00

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.095
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.331
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
   RESIDENTIAL
   "2 DWELLINGS/ACRE"         B        6.13      0.75      0.70    56   10.73
   RESIDENTIAL
   "3-4 DWELLINGS/ACRE"       B        2.48      0.75      0.60    56   10.09
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
   SUBAREA RUNOFF(CFS) =     14.17
   TOTAL AREA(ACRES) =      8.61   PEAK FLOW RATE(CFS) =     14.17

   SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
   5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

 ************************************************************************
   FLOW PROCESS FROM NODE LR020800.5 TO NODE LR020801.0 IS CODE =  63
 ------------------------------------------------------------------------
   >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
 ========================================================================
   UPSTREAM ELEVATION(FEET) = 2170.00  DOWNSTREAM ELEVATION(FEET) = 2160.00
   STREET LENGTH(FEET) =   371.36   CURB HEIGHT(INCHES) =  6.0
   STREET HALFWIDTH(FEET) = 18.00
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 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      18.67
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.43
   HALFSTREET FLOOD WIDTH(FEET) =   15.07
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.91
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.67
 STREET FLOW TRAVEL TIME(MIN.) =   1.58   Tc(MIN.) =  11.68
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.136
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        4.82      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.32      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
 SUBAREA AREA(ACRES) =    6.14      SUBAREA RUNOFF(CFS) =    9.00
 EFFECTIVE AREA(ACRES) =     14.75    AREA-AVERAGED Fm(INCH/HR) =  0.50
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.67
 TOTAL AREA(ACRES) =     14.75        PEAK FLOW RATE(CFS) =      21.66

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.45   HALFSTREET FLOOD WIDTH(FEET) =  16.01
 FLOW VELOCITY(FEET/SEC.) =  4.04   DEPTH*VELOCITY(FT*FT/SEC.) =   1.80
 LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20801.00 =  1078.26 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020801.0 TO NODE LR020802.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2160.00  DOWNSTREAM ELEVATION(FEET) = 2153.00
 STREET LENGTH(FEET) =   226.34   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
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 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.80

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      25.94
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.46
   HALFSTREET FLOOD WIDTH(FEET) =   16.71
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.46
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.05
 STREET FLOW TRAVEL TIME(MIN.) =   0.85   Tc(MIN.) =  12.53
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.048
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.63      0.75      0.60    56
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        5.58      0.75      0.70    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
 SUBAREA AREA(ACRES) =    6.21      SUBAREA RUNOFF(CFS) =    8.56
 EFFECTIVE AREA(ACRES) =     20.96    AREA-AVERAGED Fm(INCH/HR) =  0.51
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
 TOTAL AREA(ACRES) =     20.96        PEAK FLOW RATE(CFS) =      29.05

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.48   HALFSTREET FLOOD WIDTH(FEET) =  17.49
 FLOW VELOCITY(FEET/SEC.) =  4.57   DEPTH*VELOCITY(FT*FT/SEC.) =   2.18
 LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20802.00 =  1304.60 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020802.0 TO NODE LR020803.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2153.00  DOWNSTREAM ELEVATION(FEET) = 2138.00
 STREET LENGTH(FEET) =   346.96   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.73

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      31.43
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.46
   HALFSTREET FLOOD WIDTH(FEET) =   16.87
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.30
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  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.46
 STREET FLOW TRAVEL TIME(MIN.) =   1.09   Tc(MIN.) =  13.62
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.948
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        3.18      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.51      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
 SUBAREA AREA(ACRES) =    3.69      SUBAREA RUNOFF(CFS) =    4.76
 EFFECTIVE AREA(ACRES) =     24.65    AREA-AVERAGED Fm(INCH/HR) =  0.51
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
 TOTAL AREA(ACRES) =     24.65        PEAK FLOW RATE(CFS) =      31.93

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.47   HALFSTREET FLOOD WIDTH(FEET) =  17.02
 FLOW VELOCITY(FEET/SEC.) =  5.29   DEPTH*VELOCITY(FT*FT/SEC.) =   2.47
 LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20803.00 =  1651.56 FEET.

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 FLOW PROCESS FROM NODE LR020803.0 TO NODE LR020804.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2138.00  DOWNSTREAM ELEVATION(FEET) = 2133.00
 STREET LENGTH(FEET) =   266.26   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      40.50
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.55
   HALFSTREET FLOOD WIDTH(FEET) =   20.64
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.38
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.42
 STREET FLOW TRAVEL TIME(MIN.) =   1.01   Tc(MIN.) =  14.63
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.866
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
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 "2 DWELLINGS/ACRE"         B       12.65      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.45      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
 SUBAREA AREA(ACRES) =   14.10      SUBAREA RUNOFF(CFS) =   17.13
 EFFECTIVE AREA(ACRES) =     38.75    AREA-AVERAGED Fm(INCH/HR) =  0.51
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
 TOTAL AREA(ACRES) =     38.75        PEAK FLOW RATE(CFS) =      47.24

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.58   HALFSTREET FLOOD WIDTH(FEET) =  21.80
 FLOW VELOCITY(FEET/SEC.) =  4.62   DEPTH*VELOCITY(FT*FT/SEC.) =   2.66
 LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20804.00 =  1917.82 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020804.0 TO NODE LR020805.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2133.00  DOWNSTREAM ELEVATION(FEET) = 2128.00
 STREET LENGTH(FEET) =   315.22   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      52.98
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.61
   HALFSTREET FLOOD WIDTH(FEET) =   23.51
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.50
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.74
 STREET FLOW TRAVEL TIME(MIN.) =   1.17   Tc(MIN.) =  15.80
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.782
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        7.96      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        2.07      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
 SUBAREA AREA(ACRES) =   10.03      SUBAREA RUNOFF(CFS) =   11.50
 EFFECTIVE AREA(ACRES) =     48.78    AREA-AVERAGED Fm(INCH/HR) =  0.51
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  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     48.78        PEAK FLOW RATE(CFS) =      55.80

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.62   HALFSTREET FLOOD WIDTH(FEET) =  23.93
  FLOW VELOCITY(FEET/SEC.) =  4.58   DEPTH*VELOCITY(FT*FT/SEC.) =   2.83
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20805.00 =  2233.04 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020805.0 TO NODE LR020806.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2128.00  DOWNSTREAM ELEVATION(FEET) = 2098.00
  STREET LENGTH(FEET) =   616.63   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      83.05
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.59
    HALFSTREET FLOOD WIDTH(FEET) =   22.53
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.63
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.51
  STREET FLOW TRAVEL TIME(MIN.) =   1.35   Tc(MIN.) =  17.14
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.696
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       36.94      0.75      0.70    56
  SCHOOL                     B        3.99      0.75      0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        9.63      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.22      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA AREA(ACRES) =   50.78      SUBAREA RUNOFF(CFS) =   54.48
  EFFECTIVE AREA(ACRES) =     99.56    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     99.56        PEAK FLOW RATE(CFS) =     106.54

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
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  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.63   HALFSTREET FLOOD WIDTH(FEET) =  24.73
  FLOW VELOCITY(FEET/SEC.) =  8.22   DEPTH*VELOCITY(FT*FT/SEC.) =   5.22
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  616.6 FT WITH ELEVATION-DROP =  30.0 FT, IS   85.1 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20806.00
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20806.00 =  2849.67 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020806.0 TO NODE LR020807.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2098.00  DOWNSTREAM ELEVATION(FEET) = 2090.00
  STREET LENGTH(FEET) =   573.68   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     109.01
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.78
    HALFSTREET FLOOD WIDTH(FEET) =   31.81
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.20
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.04
  STREET FLOW TRAVEL TIME(MIN.) =   1.84   Tc(MIN.) =  18.98
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.596
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.85      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.45      0.75      0.60    56
  SCHOOL                     B        0.68      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.66
  SUBAREA AREA(ACRES) =    4.98      SUBAREA RUNOFF(CFS) =    4.95
  EFFECTIVE AREA(ACRES) =    104.54    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    104.54        PEAK FLOW RATE(CFS) =     106.54
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82
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  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.77   HALFSTREET FLOOD WIDTH(FEET) =  31.50
  FLOW VELOCITY(FEET/SEC.) =  5.18   DEPTH*VELOCITY(FT*FT/SEC.) =   3.99
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20807.00 =  3423.35 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020807.0 TO NODE LR020808.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2090.00  DOWNSTREAM ELEVATION(FEET) = 2070.00
  STREET LENGTH(FEET) =   620.19   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.79

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     110.69
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.68
    HALFSTREET FLOOD WIDTH(FEET) =   27.17
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.14
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.88
  STREET FLOW TRAVEL TIME(MIN.) =   1.45   Tc(MIN.) =  20.43
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.527
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        8.19      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.94      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    9.13      SUBAREA RUNOFF(CFS) =    8.31
  EFFECTIVE AREA(ACRES) =    113.67    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    113.67        PEAK FLOW RATE(CFS) =     106.54
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.68   HALFSTREET FLOOD WIDTH(FEET) =  26.80
  FLOW VELOCITY(FEET/SEC.) =  7.06   DEPTH*VELOCITY(FT*FT/SEC.) =   4.77
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20808.00 =  4043.54 FEET.

****************************************************************************
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```
  FLOW PROCESS FROM NODE LR020808.0 TO NODE LR020809.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2070.00  DOWNSTREAM ELEVATION(FEET) = 2020.00
  STREET LENGTH(FEET) =   545.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.60

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     116.94
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.60
    HALFSTREET FLOOD WIDTH(FEET) =   22.78
    AVERAGE FLOW VELOCITY(FEET/SEC.) =   10.53
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.27
  STREET FLOW TRAVEL TIME(MIN.) =   0.86   Tc(MIN.) =  21.29
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.489
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       20.40      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.29      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =   23.69      SUBAREA RUNOFF(CFS) =   20.81
  EFFECTIVE AREA(ACRES) =    137.36    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    137.36        PEAK FLOW RATE(CFS) =     121.29

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.60   HALFSTREET FLOOD WIDTH(FEET) =  23.08
  FLOW VELOCITY(FEET/SEC.) = 10.65   DEPTH*VELOCITY(FT*FT/SEC.) =   6.41

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.60
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO MAXIMIZE STREETFLOW AT DOWNSTREAM NODE **
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.09
  PIPE-FLOW(CFS) =     63.17
  PIPEFLOW TRAVEL TIME(MIN.) =   0.45    Tc(MIN.) =  20.88
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 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.507
 SUBAREA AREA(ACRES) =   23.69      SUBAREA RUNOFF(CFS) =   21.19
 TOTAL AREA(ACRES) =    137.36        PEAK FLOW RATE(CFS) =    123.45

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   60.29
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.50
   HALFSTREET FLOOD WIDTH(FEET) =   18.00
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.40
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.19
 LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20809.00 =  4588.54 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020809.0 TO NODE LR020810.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2020.00  DOWNSTREAM ELEVATION(FEET) = 2010.00
 STREET LENGTH(FEET) =   570.75   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     129.96
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.79
   HALFSTREET FLOOD WIDTH(FEET) =   32.60
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.91
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.68
 STREET FLOW TRAVEL TIME(MIN.) =   1.61   Tc(MIN.) =  22.49
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.441
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B       12.89      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        2.65      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
 SUBAREA AREA(ACRES) =   15.54      SUBAREA RUNOFF(CFS) =   13.01
 EFFECTIVE AREA(ACRES) =    152.90    AREA-AVERAGED Fm(INCH/HR) =  0.51
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
 TOTAL AREA(ACRES) =    152.90        PEAK FLOW RATE(CFS) =     128.35
```



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 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.79   HALFSTREET FLOOD WIDTH(FEET) =  32.42
 FLOW VELOCITY(FEET/SEC.) =  5.90   DEPTH*VELOCITY(FT*FT/SEC.) =   4.65
 ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
 ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
 ASSUME FULL-FLOWING PIPELINE
 PIPE-FLOW VELOCITY(FEET/SEC.) =  10.86
 PIPE-FLOW(CFS) =     64.54
 PIPEFLOW TRAVEL TIME(MIN.) =   0.88    Tc(MIN.) =  21.76
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.470
 SUBAREA AREA(ACRES) =   15.54      SUBAREA RUNOFF(CFS) =   13.42
 TOTAL AREA(ACRES) =    152.90        PEAK FLOW RATE(CFS) =    132.33

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   67.79
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.65
   HALFSTREET FLOOD WIDTH(FEET) =   25.34
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.00
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.23
 LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20810.00 =  5159.29 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020810.0 TO NODE LR020811.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 2010.00  DOWNSTREAM ELEVATION(FEET) = 1970.00
 STREET LENGTH(FEET) =   617.03   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.65

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     147.10
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.67
   HALFSTREET FLOOD WIDTH(FEET) =   26.50
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.96
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.67
 STREET FLOW TRAVEL TIME(MIN.) =   1.03   Tc(MIN.) =  22.79
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.430
```

```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       30.03      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.60      0.75      0.60    56
  PUBLIC PARK                B        0.12      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   35.75      SUBAREA RUNOFF(CFS) =   29.53
  EFFECTIVE AREA(ACRES) =    188.65    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    188.65        PEAK FLOW RATE(CFS) =     156.31

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.68   HALFSTREET FLOOD WIDTH(FEET) =  27.11
  FLOW VELOCITY(FEET/SEC.) = 10.13   DEPTH*VELOCITY(FT*FT/SEC.) =   6.91

  *NOTE: ESTIMATED STREET FLOW DEPTH IS GREATER THAN
         THE MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) = 0.65
  SIZE PIPE(S) TO SATISFY THE STREET CONSTRAINT AS FOLLOWS:
  ** PIPE SIZED TO CARRY TOTAL UPSTREAM PIPEFLOW **
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.27
  PIPE-FLOW(CFS) =     72.69
  PIPEFLOW TRAVEL TIME(MIN.) =   0.56    Tc(MIN.) =  22.32
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.448
  SUBAREA AREA(ACRES) =   35.75      SUBAREA RUNOFF(CFS) =   30.10
  TOTAL AREA(ACRES) =    188.65        PEAK FLOW RATE(CFS) =    159.36

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   86.67
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.57
    HALFSTREET FLOOD WIDTH(FEET) =   21.74
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.51
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.89
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20811.00 =  5776.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020811.0 TO NODE LR020812.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1970.00  DOWNSTREAM(FEET) =   1910.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1453.09   CHANNEL SLOPE =  0.0413
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    159.36
```



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  FLOW VELOCITY(FEET/SEC.) =   3.96   FLOW DEPTH(FEET) =   0.90
  TRAVEL TIME(MIN.) =   6.12   Tc(MIN.) =  28.44
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20812.00 =  7229.41 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020812.0 TO NODE LR020812.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  28.44
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.252
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.60      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.55      0.75      0.60    56
  PUBLIC PARK                B       18.85      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.81
  SUBAREA AREA(ACRES) =   26.00      SUBAREA RUNOFF(CFS) =   15.18
  EFFECTIVE AREA(ACRES) =    214.65   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =    214.65       PEAK FLOW RATE(CFS) =     159.36
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

****************************************************************************
  FLOW PROCESS FROM NODE LR020812.0 TO NODE LR020813.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1910.00  DOWNSTREAM(FEET) =   1870.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1523.12   CHANNEL SLOPE =  0.0263
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    159.36
  FLOW VELOCITY(FEET/SEC.) =   3.32   FLOW DEPTH(FEET) =   0.98
  TRAVEL TIME(MIN.) =   7.64   Tc(MIN.) =  36.08
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20813.00 =  8752.53 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020813.0 TO NODE LR020813.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  36.08
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.085
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B       80.80      0.75      0.85    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B      130.26      0.75      0.70    56
```

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  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       24.87      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.88      0.75      0.90    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.24      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.74
  SUBAREA AREA(ACRES) =  239.05      SUBAREA RUNOFF(CFS) =  113.99
  EFFECTIVE AREA(ACRES) =    453.70   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.72
  TOTAL AREA(ACRES) =    453.70       PEAK FLOW RATE(CFS) =     223.09

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

****************************************************************************
  FLOW PROCESS FROM NODE LR020813.0 TO NODE LR020814.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1870.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1800.00
  FLOW LENGTH(FEET) =  1542.94   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  63.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  63.0 INCH PIPE IS  25.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  26.66
  PIPE-FLOW(CFS) =    223.09
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.96    Tc(MIN.) =  37.05
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20814.00 = 10295.47 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020814.0 TO NODE LR020814.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  37.05
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.068
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       11.54      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       58.78      0.75      0.70    56
  PUBLIC PARK                B        6.25      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   76.57      SUBAREA RUNOFF(CFS) =   37.69
  EFFECTIVE AREA(ACRES) =    530.27   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.72
  TOTAL AREA(ACRES) =    530.27       PEAK FLOW RATE(CFS) =     253.82

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR020814.0 TO NODE LR020815.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1800.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1720.00
  FLOW LENGTH(FEET) =  1968.59   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  66.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  66.0 INCH PIPE IS  28.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  26.45
  PIPE-FLOW(CFS) =    253.82
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.24    Tc(MIN.) =  38.29
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20815.00 = 12264.06 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020815.0 TO NODE LR020815.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  38.29
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.047
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       28.73      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B      126.12      0.75      0.70    56
  PUBLIC PARK                B       14.88      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =  169.73      SUBAREA RUNOFF(CFS) =   80.46
  EFFECTIVE AREA(ACRES) =    700.00   AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.71
  TOTAL AREA(ACRES) =    700.00       PEAK FLOW RATE(CFS) =     324.30

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

****************************************************************************
  FLOW PROCESS FROM NODE LR020815.0 TO NODE LR020815.0 IS CODE =  71
----------------------------------------------------------------------------
  >>>>>PEAK FLOW RATE ESTIMATOR CHANGED TO UNIT-HYDROGRAPH METHOD<<<<<
  >>>>>USING TIME-OF-CONCENTRATION OF LONGEST FLOWPATH<<<<<
============================================================================
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.37;6H= 1.93;24H= 3.82
  S-GRAPH: VALLEY(DEV.)= 99.5%;VALLEY(UNDEV.)/DESERT=  0.5%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.64; LAG(HR) = 0.51; Fm(INCH/HR) = 0.53; Ybar = 0.64
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 1.00; 6HR = 1.00; 24HR= 1.00
```

```
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    700.00
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20815.00 = 12264.06 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0490; Lca/L=0.4,n=.0439; Lca/L=0.5,n=.0403;Lca/L=0.6,n=.0376
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =      89.79
  UNIT-HYDROGRAPH METHOD PEAK FLOW RATE(CFS) =    441.77
  TOTAL PEAK FLOW RATE(CFS) =    441.77 (SOURCE FLOW INCLUDED)
  RATIONAL METHOD PEAK FLOW RATE(CFS) =    324.30
   (UPSTREAM NODE PEAK FLOW RATE(CFS) =    324.30)
  PEAK FLOW RATE(CFS) USED =    441.77

****************************************************************************
  FLOW PROCESS FROM NODE LR020815.0 TO NODE LR020816.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1720.00  DOWNSTREAM(FEET) =  1680.00
  FLOW LENGTH(FEET) =  1236.10   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   6.00   GIVEN BOX HEIGHT(FEET) =   3.00
  *GIVEN BOX HEIGHT(FEET) =   3.00   ESTIMATED BOX BASEWIDTH(FEET) =    7.91
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  18.62
  BOX-FLOW(CFS) =    441.77
  BOX-FLOW TRAVEL TIME(MIN.) =   1.11    Tc(MIN.) =  39.39
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20816.00 = 13500.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020816.0 TO NODE LR020816.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  39.39
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.030
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       11.74      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       40.54      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   52.28
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.37;6H= 1.93;24H= 3.82
  S-GRAPH: VALLEY(DEV.)= 99.6%;VALLEY(UNDEV.)/DESERT=  0.4%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.66; LAG(HR) = 0.53; Fm(INCH/HR) = 0.53; Ybar = 0.63
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    752.28
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20816.00 = 13500.16 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0467; Lca/L=0.4,n=.0418; Lca/L=0.5,n=.0384;Lca/L=0.6,n=.0359
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =      96.88
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    466.91
  TOTAL AREA(ACRES) =    752.28       PEAK FLOW RATE(CFS) =     466.91
```



```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

****************************************************************************
  FLOW PROCESS FROM NODE LR020816.0 TO NODE LR020823.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1680.00  DOWNSTREAM(FEET) =  1635.00
  FLOW LENGTH(FEET) =  1150.94   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   6.00   GIVEN BOX HEIGHT(FEET) =   3.00
  *GIVEN BOX HEIGHT(FEET) =   3.00   ESTIMATED BOX BASEWIDTH(FEET) =    7.65
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  20.34
  BOX-FLOW(CFS) =    466.91
  BOX-FLOW TRAVEL TIME(MIN.) =   0.94    Tc(MIN.) =  40.34
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20823.00 = 14651.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020823.0 TO NODE LR020823.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  40.34
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.015
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        8.26      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.53      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   10.79
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.37;6H= 1.93;24H= 3.82
  S-GRAPH: VALLEY(DEV.)= 99.6%;VALLEY(UNDEV.)/DESERT=  0.4%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.67; LAG(HR) = 0.54; Fm(INCH/HR) = 0.53; Ybar = 0.63
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    763.07
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20823.00 = 14651.10 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0449; Lca/L=0.4,n=.0403; Lca/L=0.5,n=.0370;Lca/L=0.6,n=.0345
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =      98.34
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    466.09
  TOTAL AREA(ACRES) =    763.07       PEAK FLOW RATE(CFS) =     466.91
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

****************************************************************************
  FLOW PROCESS FROM NODE LR020823.0 TO NODE LR020823.0 IS CODE =   1
```

```
------------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =     466.91    Tc(MIN.) =  40.34
  AREA-AVERAGED Fm(INCH/HR) =  0.53   Ybar = 0.63
  TOTAL AREA(ACRES) =     763.07

****************************************************************************
  FLOW PROCESS FROM NODE LR020820.0 TO NODE LR020821.0 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   724.32
  ELEVATION DATA: UPSTREAM(FEET) =   1735.00  DOWNSTREAM(FEET) =   1720.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.463
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.054
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.07      0.75      0.60    56   12.46
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.01      0.75      0.70    56   13.25
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA RUNOFF(CFS) =     11.27
  TOTAL AREA(ACRES) =      8.08   PEAK FLOW RATE(CFS) =     11.27

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

****************************************************************************
  FLOW PROCESS FROM NODE LR020821.0 TO NODE LR020822.0 IS CODE =  63
------------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
==============================================================================
  UPSTREAM ELEVATION(FEET) = 1720.00  DOWNSTREAM ELEVATION(FEET) = 1700.00
  STREET LENGTH(FEET) =   668.72   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.81

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      19.52
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
```



```
    STREET FLOW DEPTH(FEET) =  0.43
    HALFSTREET FLOOD WIDTH(FEET) =   15.07
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.09
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.75
  STREET FLOW TRAVEL TIME(MIN.) =   2.73   Tc(MIN.) =  15.19
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.824
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.10      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        9.73      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA AREA(ACRES) =   13.83      SUBAREA RUNOFF(CFS) =   16.46
  EFFECTIVE AREA(ACRES) =     21.91    AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.67
  TOTAL AREA(ACRES) =     21.91        PEAK FLOW RATE(CFS) =      26.06

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.46   HALFSTREET FLOOD WIDTH(FEET) =  16.87
  FLOW VELOCITY(FEET/SEC.) =  4.40   DEPTH*VELOCITY(FT*FT/SEC.) =   2.04
  LONGEST FLOWPATH FROM NODE  20820.00 TO NODE  20822.00 =  1393.04 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020822.0 TO NODE LR020823.0 IS CODE =  33
------------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
==============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1700.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1635.00
  FLOW LENGTH(FEET) =  1753.00   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  11.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.34
  PIPE-FLOW(CFS) =     26.06
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   2.16    Tc(MIN.) =  17.35
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.684
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       28.07      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        8.56      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   36.63      SUBAREA RUNOFF(CFS) =   38.84
  EFFECTIVE AREA(ACRES) =     58.54    AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.67
  TOTAL AREA(ACRES) =     58.54        PEAK FLOW RATE(CFS) =     62.14
```

```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  6.0       STREET HALFWIDTH(FEET) = 18.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   36.08
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.49
    HALFSTREET FLOOD WIDTH(FEET) =   18.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.19
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.56
  LONGEST FLOWPATH FROM NODE  20820.00 TO NODE  20823.00 =  3146.04 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020823.0 TO NODE LR020823.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  17.35
  RAINFALL INTENSITY(INCH/HR) =   1.68
  AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.67
  EFFECTIVE STREAM AREA(ACRES) =    58.54
  TOTAL STREAM AREA(ACRES) =    58.54
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     62.14
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1       466.91   40.34      763.07  LR020800.0
     2        62.14   17.35       58.54  LR020820.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.37;6H= 1.93;24H= 3.82
  S-GRAPH: VALLEY(DEV.)= 99.6%;VALLEY(UNDEV.)/DESERT=  0.4%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.67; LAG(HR) = 0.54; Fm(INCH/HR) = 0.53; Ybar = 0.63
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    821.61
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20823.00 = 14651.10 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
```



```
   Lca/L=0.3,n=.0449; Lca/L=0.4,n=.0403; Lca/L=0.5,n=.0370;Lca/L=0.6,n=.0345
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     106.31
  PEAK FLOW RATE(CFS) =    501.26

****************************************************************************
  FLOW PROCESS FROM NODE LR020823.0 TO NODE LR020824.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1635.00  DOWNSTREAM(FEET) =  1599.00
  FLOW LENGTH(FEET) =  1479.71   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   6.00   GIVEN BOX HEIGHT(FEET) =   3.00
  *GIVEN BOX HEIGHT(FEET) =   3.00   ESTIMATED BOX BASEWIDTH(FEET) =    9.96
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  16.78
  BOX-FLOW(CFS) =    501.26
  BOX-FLOW TRAVEL TIME(MIN.) =   1.47    Tc(MIN.) =  41.81
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20824.00 = 16130.81 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020824.0 TO NODE LR020824.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  41.81
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.994
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       96.44      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       25.64      0.75      0.60    56
  COMMERCIAL                 B        1.07      0.75      0.10    56
  PUBLIC PARK                B        0.22      0.75      0.85    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        3.67      0.63      1.00    65
  SCHOOL                     B        0.34      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =  127.38
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.37;6H= 1.93;24H= 3.82
  S-GRAPH: VALLEY(DEV.)= 99.3%;VALLEY(UNDEV.)/DESERT=  0.7%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.70; LAG(HR) = 0.56; Fm(INCH/HR) = 0.53; Ybar = 0.63
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    948.99
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20824.00 = 16130.81 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0430; Lca/L=0.4,n=.0385; Lca/L=0.5,n=.0354;Lca/L=0.6,n=.0330
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     123.48
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    556.91
  TOTAL AREA(ACRES) =    948.99       PEAK FLOW RATE(CFS) =     556.91

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
```

```
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

****************************************************************************
  FLOW PROCESS FROM NODE LR020824.0 TO NODE LR020825.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1599.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1550.00
  FLOW LENGTH(FEET) =  1211.57   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  81.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  81.0 INCH PIPE IS  39.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  32.21
  PIPE-FLOW(CFS) =    556.91
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.63    Tc(MIN.) =  42.43
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20825.00 = 17342.38 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020825.0 TO NODE LR020825.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  42.43
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.985
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       10.70      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       31.03      0.75      0.70    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        0.52      0.63      1.00    65
  PUBLIC PARK                B        6.54      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   48.79
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.37;6H= 1.93;24H= 3.82
  S-GRAPH: VALLEY(DEV.)= 99.2%;VALLEY(UNDEV.)/DESERT=  0.8%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.71; LAG(HR) = 0.57; Fm(INCH/HR) = 0.53; Ybar = 0.63
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    997.78
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20825.00 = 17342.38 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0413; Lca/L=0.4,n=.0370; Lca/L=0.5,n=.0340;Lca/L=0.6,n=.0318
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     129.81
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    573.16
  TOTAL AREA(ACRES) =    997.78       PEAK FLOW RATE(CFS) =     573.16

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR020825.0 TO NODE LR020826.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1550.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1535.00
  FLOW LENGTH(FEET) =   755.22   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  93.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  93.0 INCH PIPE IS  45.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  24.85
  PIPE-FLOW(CFS) =    573.16
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.51    Tc(MIN.) =  42.94
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20826.00 = 18097.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020826.0 TO NODE LR020826.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  42.94
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.978
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        9.73      0.75      0.60    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        0.52      0.63      1.00    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.62
  SUBAREA AREA(ACRES) =   10.25
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.37;6H= 1.93;24H= 3.82
  S-GRAPH: VALLEY(DEV.)= 99.2%;VALLEY(UNDEV.)/DESERT=  0.8%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.72; LAG(HR) = 0.57; Fm(INCH/HR) = 0.53; Ybar = 0.63
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.95; 30M = 0.95; 1HR = 0.95;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1008.03
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20826.00 = 18097.60 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0403; Lca/L=0.4,n=.0362; Lca/L=0.5,n=.0332;Lca/L=0.6,n=.0310
  TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =     131.35
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    569.87
  TOTAL AREA(ACRES) =   1008.03       PEAK FLOW RATE(CFS) =     573.16
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

****************************************************************************
  FLOW PROCESS FROM NODE LR020826.0 TO NODE LR020827.0 IS CODE =  48
```

```
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1535.00  DOWNSTREAM(FEET) =  1500.00
  FLOW LENGTH(FEET) =   969.04   MANNING'S N =  0.013
  GIVEN BOX BASEWIDTH(FEET) =  10.00   GIVEN BOX HEIGHT(FEET) =   3.50
  FLOWDEPTH IN BOX IS  2.06 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  27.89
  BOX-FLOW(CFS) =    573.16
  BOX-FLOW TRAVEL TIME(MIN.) =   0.58    Tc(MIN.) =  43.52
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20827.00 = 19066.64 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020827.0 TO NODE LR020827.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  43.52
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.970
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       21.08      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   21.08
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.37;6H= 1.93;24H= 3.82
  S-GRAPH: VALLEY(DEV.)= 99.2%;VALLEY(UNDEV.)/DESERT=  0.8%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.73; LAG(HR) = 0.58; Fm(INCH/HR) = 0.52; Ybar = 0.63
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.95; 30M = 0.95; 1HR = 0.95;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1029.11
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20827.00 = 19066.64 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0393; Lca/L=0.4,n=.0352; Lca/L=0.5,n=.0323;Lca/L=0.6,n=.0302
  TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =     134.59
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    582.43
  TOTAL AREA(ACRES) =   1029.11       PEAK FLOW RATE(CFS) =     582.43

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

****************************************************************************
  FLOW PROCESS FROM NODE LR020827.0 TO NODE LR020828.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1500.00  DOWNSTREAM(FEET) =  1480.00
  FLOW LENGTH(FEET) =   712.41   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  10.00   GIVEN BOX HEIGHT(FEET) =   3.50
  FLOWDEPTH IN BOX IS  2.38 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  24.44
  BOX-FLOW(CFS) =    582.43
  BOX-FLOW TRAVEL TIME(MIN.) =   0.49    Tc(MIN.) =  44.00
```



```
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20828.00 = 19779.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020828.0 TO NODE LR020828.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  44.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.964
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       24.73      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   24.73
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.37;6H= 1.93;24H= 3.82
  S-GRAPH: VALLEY(DEV.)= 99.2%;VALLEY(UNDEV.)/DESERT=  0.8%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.73; LAG(HR) = 0.59; Fm(INCH/HR) = 0.52; Ybar = 0.63
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.95; 30M = 0.95; 1HR = 0.95;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1053.84
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20828.00 = 19779.05 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0386; Lca/L=0.4,n=.0346; Lca/L=0.5,n=.0318;Lca/L=0.6,n=.0296
  TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =     138.39
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    597.11
  TOTAL AREA(ACRES) =   1053.84       PEAK FLOW RATE(CFS) =     597.11

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

****************************************************************************
  FLOW PROCESS FROM NODE LR020828.0 TO NODE LR020829.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1480.00  DOWNSTREAM(FEET) =  1465.00
  FLOW LENGTH(FEET) =   766.85   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  10.00   GIVEN BOX HEIGHT(FEET) =   3.50
  *GIVEN BOX HEIGHT(FEET) =   3.50   ESTIMATED BOX BASEWIDTH(FEET) =  10.41
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  16.38
  BOX-FLOW(CFS) =    597.11
  BOX-FLOW TRAVEL TIME(MIN.) =   0.78    Tc(MIN.) =  44.78
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20829.00 = 20545.90 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020829.0 TO NODE LR020829.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  44.78
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.953
```

```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       13.31      0.75       0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   13.31
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.37;6H= 1.93;24H= 3.82
  S-GRAPH: VALLEY(DEV.)= 99.2%;VALLEY(UNDEV.)/DESERT=  0.8%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.75; LAG(HR) = 0.60; Fm(INCH/HR) = 0.52; Ybar = 0.62
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.95; 30M = 0.95; 1HR = 0.95;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1067.15
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20829.00 = 20545.90 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0380; Lca/L=0.4,n=.0341; Lca/L=0.5,n=.0313;Lca/L=0.6,n=.0292
  TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =     140.43
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    602.07
  TOTAL AREA(ACRES) =   1067.15       PEAK FLOW RATE(CFS) =     602.07

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

****************************************************************************
  FLOW PROCESS FROM NODE LR020829.0 TO NODE LR020829.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020764.0 TO NODE LR020764.0 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20764.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1251.00    Tc(MIN.) =  30.00
  AREA-AVERAGED Fm(INCH/HR) =  0.48    Ybar = 0.57
  TOTAL AREA(ACRES) =    1696.39
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20764.00 = 21121.48 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020764.0 TO NODE LR020764.0 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1251.00    Tc(MIN.) =  30.00
  AREA-AVERAGED Fm(INCH/HR) =  0.48    Ybar = 0.57
  TOTAL AREA(ACRES) =    1696.39
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20764.00 = 21121.48 FEET.

****************************************************************************
```



```
  FLOW PROCESS FROM NODE LR020764.0 TO NODE LR020764.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020764.0 TO NODE LR020829.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1510.00  DOWNSTREAM(FEET) =  1465.00
  FLOW LENGTH(FEET) =  1297.04   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  15.00   GIVEN BOX HEIGHT(FEET) =   5.00
  FLOWDEPTH IN BOX IS  2.68 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  31.11
  BOX-FLOW(CFS) =   1251.00
  BOX-FLOW TRAVEL TIME(MIN.) =   0.69    Tc(MIN.) =  30.70
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20829.00 = 22418.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020829.0 TO NODE LR020829.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     1251.00    Tc(MIN.) =  30.70
  AREA-AVERAGED Fm(INCH/HR) =  0.48    Ybar = 0.57
  TOTAL AREA(ACRES) =    1696.39
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20829.00 = 22418.52 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =      602.07    Tc(MIN.) =  44.78
  AREA-AVERAGED Fm(INCH/HR) =  0.52    Ybar = 0.62
  TOTAL AREA(ACRES) =    1067.15
  LONGEST FLOWPATH FROM NODE  20800.00 TO NODE  20829.00 = 20545.90 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.38;6H= 1.94;24H= 3.95
  S-GRAPH: VALLEY(DEV.)= 92.0%;VALLEY(UNDEV.)/DESERT=  8.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.51; LAG(HR) = 0.41; Fm(INCH/HR) = 0.50; Ybar = 0.59
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.88; 30M = 0.88; 1HR = 0.88;
  3HR = 0.98; 6HR = 0.99; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   2763.54
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20829.00 = 22418.52 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0238; Lca/L=0.4,n=.0214; Lca/L=0.5,n=.0196;Lca/L=0.6,n=.0183
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     395.98
  PEAK FLOW RATE(CFS) =    1819.93

****************************************************************************
  FLOW PROCESS FROM NODE LR020829.0 TO NODE LR020829.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR020829.0 TO NODE LR020852.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1465.00  DOWNSTREAM(FEET) =  1413.00
  FLOW LENGTH(FEET) =  2003.77   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  24.00   GIVEN BOX HEIGHT(FEET) =   5.00
  FLOWDEPTH IN BOX IS  2.64 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  28.67
  BOX-FLOW(CFS) =   1819.93
  BOX-FLOW TRAVEL TIME(MIN.) =   1.16    Tc(MIN.) =  31.86
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20852.00 = 24422.29 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020852.0 TO NODE LR020852.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =    1819.93    Tc(MIN.) =  31.86
  AREA-AVERAGED Fm(INCH/HR) =  0.50   Ybar = 0.59
  TOTAL AREA(ACRES) =    2763.54

****************************************************************************
  FLOW PROCESS FROM NODE LR020830.0 TO NODE LR020831.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   814.59
  ELEVATION DATA: UPSTREAM(FEET) =   1490.00  DOWNSTREAM(FEET) =   1475.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.868
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.363
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        6.12      0.75      0.60    56   13.37
  COMMERCIAL                 B        1.79      0.75      0.10    56    9.87
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.49
  SUBAREA RUNOFF(CFS) =     14.23
  TOTAL AREA(ACRES) =      7.91   PEAK FLOW RATE(CFS) =     14.23

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

****************************************************************************
  FLOW PROCESS FROM NODE LR020831.0 TO NODE LR020832.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
```



```
  UPSTREAM NODE ELEVATION(FEET) =  1475.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1464.00
  FLOW LENGTH(FEET) =   301.44   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  72.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  72.0 INCH PIPE IS   6.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.90
  PIPE-FLOW(CFS) =     14.23
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.49    Tc(MIN.) =  10.36
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.295
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        7.31      0.75      0.60    56
  COMMERCIAL                 B        3.62      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.43
  SUBAREA AREA(ACRES) =   10.93      SUBAREA RUNOFF(CFS) =   19.38
  EFFECTIVE AREA(ACRES) =     18.84    AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.46
  TOTAL AREA(ACRES) =     18.84        PEAK FLOW RATE(CFS) =     33.13

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  6.0       STREET HALFWIDTH(FEET) = 18.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   18.90
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.41
    HALFSTREET FLOOD WIDTH(FEET) =   14.29
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.38
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.80
  LONGEST FLOWPATH FROM NODE  20830.00 TO NODE  20832.00 =  1116.03 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020832.0 TO NODE LR020833.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1464.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1440.00
  FLOW LENGTH(FEET) =   991.27   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  72.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  72.0 INCH PIPE IS  11.0 INCHES
```

```
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.17
  PIPE-FLOW(CFS) =     33.13
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.36    Tc(MIN.) =  11.71
  LONGEST FLOWPATH FROM NODE  20830.00 TO NODE  20833.00 =  2107.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020833.0 TO NODE LR020833.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  11.71
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.132
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       23.09      0.75      0.60    56
  COMMERCIAL                 B        9.26      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.46
  SUBAREA AREA(ACRES) =   32.35      SUBAREA RUNOFF(CFS) =   52.12
  EFFECTIVE AREA(ACRES) =     51.19   AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.46
  TOTAL AREA(ACRES) =     51.19       PEAK FLOW RATE(CFS) =      82.48

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

****************************************************************************
  FLOW PROCESS FROM NODE LR020833.0 TO NODE LR020852.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1440.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1413.00
  FLOW LENGTH(FEET) =  1064.34   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  72.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  72.0 INCH PIPE IS  17.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.18
  PIPE-FLOW(CFS) =     82.48
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.10    Tc(MIN.) =  12.81
  LONGEST FLOWPATH FROM NODE  20830.00 TO NODE  20852.00 =  3171.64 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020852.0 TO NODE LR020852.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  12.81
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.020
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
```



```
  "3-4 DWELLINGS/ACRE"       B        2.67      0.75      0.60    56
  MOBILE HOME PARK           B        3.54      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
  SUBAREA AREA(ACRES) =    6.21      SUBAREA RUNOFF(CFS) =    9.62
  EFFECTIVE AREA(ACRES) =     57.40   AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.45
  TOTAL AREA(ACRES) =     57.40       PEAK FLOW RATE(CFS) =      86.96

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

****************************************************************************
  FLOW PROCESS FROM NODE LR020852.0 TO NODE LR020852.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  12.81
  RAINFALL INTENSITY(INCH/HR) =   2.02
  AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.45
  EFFECTIVE STREAM AREA(ACRES) =    57.40
  TOTAL STREAM AREA(ACRES) =    57.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     86.96

****************************************************************************
  FLOW PROCESS FROM NODE LR020840.0 TO NODE LR020841.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   708.14
  ELEVATION DATA: UPSTREAM(FEET) =   1630.00  DOWNSTREAM(FEET) =   1600.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.898
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.701
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        3.00      0.75      0.50    56   10.11
  COMMERCIAL                 B        5.71      0.75      0.10    56    7.90
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.09      0.75      0.60    56   10.70
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.28
  SUBAREA RUNOFF(CFS) =     21.99
  TOTAL AREA(ACRES) =      9.80   PEAK FLOW RATE(CFS) =     21.99

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

****************************************************************************
  FLOW PROCESS FROM NODE LR020841.0 TO NODE LR020842.0 IS CODE =  54
```

```
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1600.00  DOWNSTREAM(FEET) =   1580.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   218.02   CHANNEL SLOPE =  0.0917
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     21.99
  FLOW VELOCITY(FEET/SEC.) =   4.40   FLOW DEPTH(FEET) =   0.58
  TRAVEL TIME(MIN.) =   0.83   Tc(MIN.) =   8.72
  LONGEST FLOWPATH FROM NODE  20840.00 TO NODE  20842.00 =   926.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020842.0 TO NODE LR020842.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =   8.72
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.544
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B        3.16      0.75      0.25    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        2.28      0.75      0.50    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.36      0.75      0.60    56
  COMMERCIAL                 B        1.50      0.75      0.10    56
  PUBLIC PARK                B        0.63      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.38
  SUBAREA AREA(ACRES) =    8.93      SUBAREA RUNOFF(CFS) =   18.14
  EFFECTIVE AREA(ACRES) =     18.73   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.33
  TOTAL AREA(ACRES) =     18.73       PEAK FLOW RATE(CFS) =      38.74

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

****************************************************************************
  FLOW PROCESS FROM NODE LR020842.0 TO NODE LR020843.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1580.00  DOWNSTREAM(FEET) =   1560.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   248.99   CHANNEL SLOPE =  0.0803
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     38.74
  FLOW VELOCITY(FEET/SEC.) =   4.78   FLOW DEPTH(FEET) =   0.74
  TRAVEL TIME(MIN.) =   0.87   Tc(MIN.) =   9.59
  LONGEST FLOWPATH FROM NODE  20840.00 TO NODE  20843.00 =  1175.15 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020843.0 TO NODE LR020843.0 IS CODE =  81
----------------------------------------------------------------------------
```



```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =   9.59
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.403
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B        4.09      0.75      0.25    56
  PUBLIC PARK                B        1.15      0.75      0.85    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.11      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.39
  SUBAREA AREA(ACRES) =    5.35      SUBAREA RUNOFF(CFS) =   10.18
  EFFECTIVE AREA(ACRES) =     24.08   AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.34
  TOTAL AREA(ACRES) =     24.08       PEAK FLOW RATE(CFS) =      46.55

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

****************************************************************************
  FLOW PROCESS FROM NODE LR020843.0 TO NODE LR020844.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1560.00  DOWNSTREAM(FEET) =   1557.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   185.64   CHANNEL SLOPE =  0.0162
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     46.55
  FLOW VELOCITY(FEET/SEC.) =   2.74   FLOW DEPTH(FEET) =   1.06
  TRAVEL TIME(MIN.) =   1.13   Tc(MIN.) =  10.72
  LONGEST FLOWPATH FROM NODE  20840.00 TO NODE  20844.00 =  1360.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020844.0 TO NODE LR020844.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  10.72
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.248
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B        2.82      0.75      0.25    56
  PUBLIC PARK                B        1.93      0.75      0.85    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.39      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =    5.14      SUBAREA RUNOFF(CFS) =    8.66
  EFFECTIVE AREA(ACRES) =     29.22   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.37
  TOTAL AREA(ACRES) =     29.22       PEAK FLOW RATE(CFS) =      51.86

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
```

```
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

****************************************************************************
  FLOW PROCESS FROM NODE LR020844.0 TO NODE LR020845.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1557.00  DOWNSTREAM(FEET) =   1555.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   193.68   CHANNEL SLOPE =  0.0103
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     51.86
  FLOW VELOCITY(FEET/SEC.) =   2.39   FLOW DEPTH(FEET) =   1.20
  TRAVEL TIME(MIN.) =   1.35   Tc(MIN.) =  12.07
  LONGEST FLOWPATH FROM NODE  20840.00 TO NODE  20845.00 =  1554.47 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020845.0 TO NODE LR020845.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  12.07
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.094
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B        0.75      0.75      0.25    56
  PUBLIC PARK                B        1.88      0.75      0.85    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.24      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA AREA(ACRES) =    2.87      SUBAREA RUNOFF(CFS) =    4.11
  EFFECTIVE AREA(ACRES) =     32.09   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.40
  TOTAL AREA(ACRES) =     32.09       PEAK FLOW RATE(CFS) =      51.90

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

****************************************************************************
  FLOW PROCESS FROM NODE LR020845.0 TO NODE LR020846.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1555.00  DOWNSTREAM(FEET) =   1552.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   263.74   CHANNEL SLOPE =  0.0114
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     51.90
  FLOW VELOCITY(FEET/SEC.) =   2.49   FLOW DEPTH(FEET) =   1.18
  TRAVEL TIME(MIN.) =   1.77   Tc(MIN.) =  13.84
  LONGEST FLOWPATH FROM NODE  20840.00 TO NODE  20846.00 =  1818.21 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020846.0 TO NODE LR020846.0 IS CODE =  81
```



```
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  13.84
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.929
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B        0.82      0.75      0.25    56
  PUBLIC PARK                B        2.06      0.75      0.85    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.10      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    2.98      SUBAREA RUNOFF(CFS) =    3.82
  EFFECTIVE AREA(ACRES) =     35.07   AREA-AVERAGED Fm(INCH/HR) =  0.31
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.42
  TOTAL AREA(ACRES) =     35.07       PEAK FLOW RATE(CFS) =      51.90
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

****************************************************************************
  FLOW PROCESS FROM NODE LR020846.0 TO NODE LR020847.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1552.00  DOWNSTREAM(FEET) =   1550.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   185.20   CHANNEL SLOPE =  0.0108
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     51.90
  FLOW VELOCITY(FEET/SEC.) =   2.43   FLOW DEPTH(FEET) =   1.19
  TRAVEL TIME(MIN.) =   1.27   Tc(MIN.) =  15.11
  LONGEST FLOWPATH FROM NODE  20840.00 TO NODE  20847.00 =  2003.41 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020847.0 TO NODE LR020847.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  15.11
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.830
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B        2.48      0.75      0.25    56
  PUBLIC PARK                B        2.79      0.75      0.85    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.16      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.57
  SUBAREA AREA(ACRES) =    5.43      SUBAREA RUNOFF(CFS) =    6.87
  EFFECTIVE AREA(ACRES) =     40.50   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.44
  TOTAL AREA(ACRES) =     40.50       PEAK FLOW RATE(CFS) =      54.70
```

```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

****************************************************************************
  FLOW PROCESS FROM NODE LR020847.0 TO NODE LR020848.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1550.00  DOWNSTREAM(FEET) =   1540.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   371.70   CHANNEL SLOPE =  0.0269
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     54.70
  FLOW VELOCITY(FEET/SEC.) =   3.47   FLOW DEPTH(FEET) =   1.03
  TRAVEL TIME(MIN.) =   1.79   Tc(MIN.) =  16.89
  LONGEST FLOWPATH FROM NODE  20840.00 TO NODE  20848.00 =  2375.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020848.0 TO NODE LR020848.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  16.89
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.711
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B        0.62      0.75      0.25    56
  PUBLIC PARK                B        5.12      0.75      0.85    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.12      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.78
  SUBAREA AREA(ACRES) =    5.86      SUBAREA RUNOFF(CFS) =    5.94
  EFFECTIVE AREA(ACRES) =     46.36   AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.48
  TOTAL AREA(ACRES) =     46.36       PEAK FLOW RATE(CFS) =      56.32

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

****************************************************************************
  FLOW PROCESS FROM NODE LR020848.0 TO NODE LR020849.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1540.00  DOWNSTREAM(FEET) =   1510.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   324.67   CHANNEL SLOPE =  0.0924
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     56.32
  FLOW VELOCITY(FEET/SEC.) =   5.57   FLOW DEPTH(FEET) =   0.82
  TRAVEL TIME(MIN.) =   0.97   Tc(MIN.) =  17.86
  LONGEST FLOWPATH FROM NODE  20840.00 TO NODE  20849.00 =  2699.78 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR020849.0 TO NODE LR020849.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.86
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.655
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        1.44      0.75      0.85    56
  MOBILE HOME PARK           B        0.53      0.75      0.25    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.02      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    1.99      SUBAREA RUNOFF(CFS) =    2.04
  EFFECTIVE AREA(ACRES) =     48.35   AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.49
  TOTAL AREA(ACRES) =     48.35       PEAK FLOW RATE(CFS) =      56.32
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

****************************************************************************
  FLOW PROCESS FROM NODE LR020849.0 TO NODE LR020850.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1510.00  DOWNSTREAM ELEVATION(FEET) = 1497.00
  STREET LENGTH(FEET) =   288.19   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.72

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      66.33
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.56
    HALFSTREET FLOOD WIDTH(FEET) =   21.07
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.90
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.88
  STREET FLOW TRAVEL TIME(MIN.) =   0.70   Tc(MIN.) =  18.56
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.617
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
```

```
  "3-4 DWELLINGS/ACRE"       B        1.94      0.75      0.60    56
  MOBILE HOME PARK           B        9.09      0.75      0.25    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        5.99      0.63      1.00    65
  PUBLIC PARK                B        1.08      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.68
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.57
  SUBAREA AREA(ACRES) =   18.10      SUBAREA RUNOFF(CFS) =   20.02
  EFFECTIVE AREA(ACRES) =     66.45    AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.51
  TOTAL AREA(ACRES) =     66.45        PEAK FLOW RATE(CFS) =      74.39

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.58   HALFSTREET FLOOD WIDTH(FEET) =  21.92
  FLOW VELOCITY(FEET/SEC.) =  7.19   DEPTH*VELOCITY(FT*FT/SEC.) =   4.16
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  288.2 FT WITH ELEVATION-DROP =  13.0 FT, IS   45.5 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20850.00
  LONGEST FLOWPATH FROM NODE  20840.00 TO NODE  20850.00 =  2987.97 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020850.0 TO NODE LR020851.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1497.00  DOWNSTREAM ELEVATION(FEET) = 1435.00
  STREET LENGTH(FEET) =  2619.33   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.86

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     113.35
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.72
    HALFSTREET FLOOD WIDTH(FEET) =   29.12
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.41
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.63
  STREET FLOW TRAVEL TIME(MIN.) =   6.81   Tc(MIN.) =  25.37
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.341
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       82.38      0.75      0.60    56
  MOBILE HOME PARK           B       10.87      0.75      0.25    56
```



```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.56
  SUBAREA AREA(ACRES) =   93.25      SUBAREA RUNOFF(CFS) =   77.42
  EFFECTIVE AREA(ACRES) =    159.70    AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.54
  TOTAL AREA(ACRES) =    159.70        PEAK FLOW RATE(CFS) =     135.26

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.76   HALFSTREET FLOOD WIDTH(FEET) =  31.20
  FLOW VELOCITY(FEET/SEC.) =  6.70   DEPTH*VELOCITY(FT*FT/SEC.) =   5.12
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 2619.3 FT WITH ELEVATION-DROP =  62.0 FT, IS  110.3 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20851.00
  LONGEST FLOWPATH FROM NODE  20840.00 TO NODE  20851.00 =  5607.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020851.0 TO NODE LR020852.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1435.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1413.00
  FLOW LENGTH(FEET) =  1025.18   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  26.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.83
  PIPE-FLOW(CFS) =    135.26
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.96    Tc(MIN.) =  26.33
  LONGEST FLOWPATH FROM NODE  20840.00 TO NODE  20852.00 =  6632.48 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020852.0 TO NODE LR020852.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  26.33
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.311
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       12.28      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   12.28      SUBAREA RUNOFF(CFS) =    9.53
  EFFECTIVE AREA(ACRES) =    171.98   AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.54
  TOTAL AREA(ACRES) =    171.98       PEAK FLOW RATE(CFS) =     140.55

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.93; 24HR = 3.82
```

```
**************************************************************************
  FLOW PROCESS FROM NODE LR020852.0 TO NODE LR020852.0 IS CODE =   1
--------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==========================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =  26.33
  RAINFALL INTENSITY(INCH/HR) =   1.31
  AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.74
  AREA-AVERAGED Ap =  0.54
  EFFECTIVE STREAM AREA(ACRES) =   171.98
  TOTAL STREAM AREA(ACRES) =   171.98
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    140.55
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1      1819.93   31.86     2763.54  LR020620.0
     2        86.96   12.81       57.40  LR020830.0
     3       140.55   26.33      171.98  LR020840.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.38;6H= 1.94;24H= 3.94
  S-GRAPH: VALLEY(DEV.)= 92.4%;VALLEY(UNDEV.)/DESERT=  7.6%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.53; LAG(HR) = 0.42; Fm(INCH/HR) = 0.49; Ybar = 0.58
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.87; 30M = 0.87; 1HR = 0.87;
  3HR = 0.98; 6HR = 0.99; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   2992.92
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20852.00 = 24422.29 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0231; Lca/L=0.4,n=.0207; Lca/L=0.5,n=.0190;Lca/L=0.6,n=.0178
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     434.98
  PEAK FLOW RATE(CFS) =   1943.30

**************************************************************************
  FLOW PROCESS FROM NODE LR020852.0 TO NODE LR020852.0 IS CODE = 152
--------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
==========================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20852.dna
==========================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =   2992.92  TC(MIN.) =     31.86
  AREA-AVERAGED Fm(INCH/HR)=  0.49   Ybar =  0.58
  PEAK FLOW RATE(CFS)   =   1943.30
==========================================================================
==========================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                          San Bernardino County
                    Transportation/ Flood Control Department

                          Water Resources Division

 ************************ DESCRIPTION OF STUDY *************************
* LR0209ZZ                                                             *
* 10-Year Storm                                                        *
*                                                                      *
 ************************************************************************

  FILE NAME: LR0209ZZ.Z10
  TIME/DATE OF STUDY: 09:58 02/22/2006
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 0.8000

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
```



```
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


************************************************************************
  FLOW PROCESS FROM NODE LR020900.0 TO NODE LR020901.0 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   751.64
  ELEVATION DATA: UPSTREAM(FEET) =   1840.00  DOWNSTREAM(FEET) =   1798.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.372
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.293
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.85      0.75       0.90    56   12.26
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.85      0.75       0.60    56   10.37
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        8.78      0.75       0.70    56   11.03
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.71
  SUBAREA RUNOFF(CFS) =     16.63
  TOTAL AREA(ACRES) =     10.48   PEAK FLOW RATE(CFS) =     16.63

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

************************************************************************
  FLOW PROCESS FROM NODE LR020901.0 TO NODE LR020902.0 IS CODE =  63
------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
========================================================================
  UPSTREAM ELEVATION(FEET) = 1798.00  DOWNSTREAM ELEVATION(FEET) = 1770.00
```

```
  STREET LENGTH(FEET) =   427.68   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.65

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      20.43
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.39
    HALFSTREET FLOOD WIDTH(FEET) =   13.12
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.56
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.16
  STREET FLOW TRAVEL TIME(MIN.) =   1.28   Tc(MIN.) =  11.65
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.138
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.43      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.53      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.46      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.78
  SUBAREA AREA(ACRES) =    5.42      SUBAREA RUNOFF(CFS) =    7.59
  EFFECTIVE AREA(ACRES) =     15.90    AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =     15.90        PEAK FLOW RATE(CFS) =      22.76

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.40   HALFSTREET FLOOD WIDTH(FEET) =  13.66
  FLOW VELOCITY(FEET/SEC.) =  5.73   DEPTH*VELOCITY(FT*FT/SEC.) =   2.29
  LONGEST FLOWPATH FROM NODE  20900.00 TO NODE  20902.00 =  1179.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020902.0 TO NODE LR020903.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1770.00  DOWNSTREAM ELEVATION(FEET) = 1758.00
  STREET LENGTH(FEET) =   465.31   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
```



```
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      25.98
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.47
    HALFSTREET FLOOD WIDTH(FEET) =   17.34
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.16
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.97
  STREET FLOW TRAVEL TIME(MIN.) =   1.86   Tc(MIN.) =  13.52
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.956
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.12      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.54      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.53      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.77
  SUBAREA AREA(ACRES) =    5.19      SUBAREA RUNOFF(CFS) =    6.44
  EFFECTIVE AREA(ACRES) =     21.09    AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.74
  TOTAL AREA(ACRES) =     21.09        PEAK FLOW RATE(CFS) =      26.59

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.48   HALFSTREET FLOOD WIDTH(FEET) =  17.49
  FLOW VELOCITY(FEET/SEC.) =  4.18   DEPTH*VELOCITY(FT*FT/SEC.) =   1.99
  LONGEST FLOWPATH FROM NODE  20900.00 TO NODE  20903.00 =  1644.63 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020903.0 TO NODE LR020904.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1758.00  DOWNSTREAM ELEVATION(FEET) = 1750.00
  STREET LENGTH(FEET) =   486.20   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90
```

```
  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      38.81
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.56
  HALFSTREET FLOOD WIDTH(FEET) =   20.82
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.13
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.30
 STREET FLOW TRAVEL TIME(MIN.) =   1.96   Tc(MIN.) =  15.48
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.803
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        3.95      0.75      0.90    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        2.03      0.75      0.60    56
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B       15.54      0.75      0.70    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.73
 SUBAREA AREA(ACRES) =   21.52      SUBAREA RUNOFF(CFS) =   24.39
 EFFECTIVE AREA(ACRES) =     42.61    AREA-AVERAGED Fm(INCH/HR) =  0.55
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.73
 TOTAL AREA(ACRES) =     42.61        PEAK FLOW RATE(CFS) =      48.08

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.59   HALFSTREET FLOOD WIDTH(FEET) =  22.53
 FLOW VELOCITY(FEET/SEC.) =  4.42   DEPTH*VELOCITY(FT*FT/SEC.) =   2.61
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  486.2 FT WITH ELEVATION-DROP =   8.0 FT, IS   32.0 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20904.00
 LONGEST FLOWPATH FROM NODE  20900.00 TO NODE  20904.00 =  2130.83 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020904.0 TO NODE LR020905.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1750.00  DOWNSTREAM ELEVATION(FEET) = 1715.00
 STREET LENGTH(FEET) =   660.51   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.69

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      60.36
```



```
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.54
  HALFSTREET FLOOD WIDTH(FEET) =   19.78
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.05
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.78
 STREET FLOW TRAVEL TIME(MIN.) =   1.56   Tc(MIN.) =  17.04
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.702
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        8.61      0.75      0.90    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        2.14      0.75      0.60    56
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B       13.33      0.75      0.70    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.76
 SUBAREA AREA(ACRES) =   24.08      SUBAREA RUNOFF(CFS) =   24.53
 EFFECTIVE AREA(ACRES) =     66.69    AREA-AVERAGED Fm(INCH/HR) =  0.56
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.74
 TOTAL AREA(ACRES) =     66.69        PEAK FLOW RATE(CFS) =      68.74

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.55   HALFSTREET FLOOD WIDTH(FEET) =  20.70
 FLOW VELOCITY(FEET/SEC.) =  7.39   DEPTH*VELOCITY(FT*FT/SEC.) =   4.09
 LONGEST FLOWPATH FROM NODE  20900.00 TO NODE  20905.00 =  2791.34 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020905.0 TO NODE LR020906.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1715.00  DOWNSTREAM ELEVATION(FEET) = 1670.00
 STREET LENGTH(FEET) =  1223.70   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.76

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      76.25
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.60
   HALFSTREET FLOOD WIDTH(FEET) =   23.02
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.73
```

```
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.04
  STREET FLOW TRAVEL TIME(MIN.) =   3.03   Tc(MIN.) =  20.07
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.543
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        7.55      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.61      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        8.18      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.78
  SUBAREA AREA(ACRES) =   17.34      SUBAREA RUNOFF(CFS) =   15.00
  EFFECTIVE AREA(ACRES) =     84.03    AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.75
  TOTAL AREA(ACRES) =     84.03        PEAK FLOW RATE(CFS) =      74.19

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.60   HALFSTREET FLOOD WIDTH(FEET) =  22.78
  FLOW VELOCITY(FEET/SEC.) =  6.68   DEPTH*VELOCITY(FT*FT/SEC.) =   3.98
  LONGEST FLOWPATH FROM NODE  20900.00 TO NODE  20906.00 =  4015.04 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020906.0 TO NODE LR020920.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1670.00  DOWNSTREAM ELEVATION(FEET) = 1600.00
  STREET LENGTH(FEET) =  1513.04   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.71

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      81.22
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.59
    HALFSTREET FLOOD WIDTH(FEET) =   22.59
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.42
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.39
  STREET FLOW TRAVEL TIME(MIN.) =   3.40   Tc(MIN.) =  23.47
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.405
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```



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       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.66      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        8.47      0.75      0.70    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        0.16      0.63      1.00    65
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        7.50      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.77
  SUBAREA AREA(ACRES) =   18.79      SUBAREA RUNOFF(CFS) =   14.06
  EFFECTIVE AREA(ACRES) =    102.82    AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.75
  TOTAL AREA(ACRES) =    102.82        PEAK FLOW RATE(CFS) =      77.80

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.58   HALFSTREET FLOOD WIDTH(FEET) =  22.23
  FLOW VELOCITY(FEET/SEC.) =  7.33   DEPTH*VELOCITY(FT*FT/SEC.) =   4.29
  LONGEST FLOWPATH FROM NODE  20900.00 TO NODE  20920.00 =  5528.08 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020920.0 TO NODE LR020920.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  23.47
  RAINFALL INTENSITY(INCH/HR) =   1.40
  AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.75
  EFFECTIVE STREAM AREA(ACRES) =   102.82
  TOTAL STREAM AREA(ACRES) =   102.82
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     77.80

****************************************************************************
  FLOW PROCESS FROM NODE LR020910.0 TO NODE LR020911.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   679.60
  ELEVATION DATA: UPSTREAM(FEET) =   1825.00  DOWNSTREAM(FEET) =   1795.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.443
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.284
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.59      0.75      0.60    56   10.44
  RESIDENTIAL
```

```
  ".4 DWELLING/ACRE"         B        4.98      0.75      0.90    56   12.34
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.87
  SUBAREA RUNOFF(CFS) =      8.19
  TOTAL AREA(ACRES) =      5.57   PEAK FLOW RATE(CFS) =      8.19

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

****************************************************************************
  FLOW PROCESS FROM NODE LR020911.0 TO NODE LR020912.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1795.00  DOWNSTREAM(FEET) =   1780.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   216.45   CHANNEL SLOPE =  0.0693
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  25.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      8.19
  FLOW VELOCITY(FEET/SEC.) =   2.70   FLOW DEPTH(FEET) =   0.35
  TRAVEL TIME(MIN.) =   1.33   Tc(MIN.) =  11.78
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20912.00 =   896.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020912.0 TO NODE LR020912.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  11.78
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.125
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.20      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        5.94      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.89
  SUBAREA AREA(ACRES) =    6.14      SUBAREA RUNOFF(CFS) =    8.06
  EFFECTIVE AREA(ACRES) =     11.71   AREA-AVERAGED Fm(INCH/HR) =  0.66
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.88
  TOTAL AREA(ACRES) =     11.71       PEAK FLOW RATE(CFS) =      15.46

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

****************************************************************************
  FLOW PROCESS FROM NODE LR020912.0 TO NODE LR020913.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1780.00  DOWNSTREAM(FEET) =   1770.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   292.78   CHANNEL SLOPE =  0.0342
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  25.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
```



```
  CHANNEL FLOW THRU SUBAREA(CFS) =     15.46
  FLOW VELOCITY(FEET/SEC.) =   2.41   FLOW DEPTH(FEET) =   0.51
  TRAVEL TIME(MIN.) =   2.02   Tc(MIN.) =  13.80
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20913.00 =  1188.83 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020913.0 TO NODE LR020913.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  13.80
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.932
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.69      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        9.60      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.88
  SUBAREA AREA(ACRES) =   10.29      SUBAREA RUNOFF(CFS) =   11.80
  EFFECTIVE AREA(ACRES) =     22.00   AREA-AVERAGED Fm(INCH/HR) =  0.66
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.88
  TOTAL AREA(ACRES) =     22.00       PEAK FLOW RATE(CFS) =      25.23

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

****************************************************************************
  FLOW PROCESS FROM NODE LR020913.0 TO NODE LR020914.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1770.00  DOWNSTREAM(FEET) =   1740.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   493.77   CHANNEL SLOPE =  0.0608
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     25.23
  FLOW VELOCITY(FEET/SEC.) =   2.90   FLOW DEPTH(FEET) =   0.42
  TRAVEL TIME(MIN.) =   2.83   Tc(MIN.) =  16.63
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20914.00 =  1682.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020914.0 TO NODE LR020914.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  16.63
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.727
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        8.27      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.58      0.75      0.60    56
```

```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.88
  SUBAREA AREA(ACRES) =    8.85      SUBAREA RUNOFF(CFS) =    8.51
  EFFECTIVE AREA(ACRES) =     30.85   AREA-AVERAGED Fm(INCH/HR) =  0.66
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.88
  TOTAL AREA(ACRES) =     30.85       PEAK FLOW RATE(CFS) =      29.69

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

****************************************************************************
  FLOW PROCESS FROM NODE LR020914.0 TO NODE LR020915.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1740.00  DOWNSTREAM(FEET) =   1720.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   642.16   CHANNEL SLOPE =  0.0311
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     29.69
  FLOW VELOCITY(FEET/SEC.) =   2.32   FLOW DEPTH(FEET) =   0.51
  TRAVEL TIME(MIN.) =   4.62   Tc(MIN.) =  21.26
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20915.00 =  2324.76 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020915.0 TO NODE LR020915.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.26
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.491
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        3.54      0.75      0.90    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.59      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.86
  SUBAREA AREA(ACRES) =    4.13      SUBAREA RUNOFF(CFS) =    3.16
  EFFECTIVE AREA(ACRES) =     34.98   AREA-AVERAGED Fm(INCH/HR) =  0.66
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.88
  TOTAL AREA(ACRES) =     34.98       PEAK FLOW RATE(CFS) =      29.69
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

****************************************************************************
  FLOW PROCESS FROM NODE LR020915.0 TO NODE LR020916.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1720.00  DOWNSTREAM ELEVATION(FEET) = 1700.00
  STREET LENGTH(FEET) =   683.96   CURB HEIGHT(INCHES) =  6.0
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  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.81

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      37.22
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.51
    HALFSTREET FLOOD WIDTH(FEET) =   18.50
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.91
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.50
  STREET FLOW TRAVEL TIME(MIN.) =   2.32   Tc(MIN.) =  23.58
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.401
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.86      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       20.51      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.88
  SUBAREA AREA(ACRES) =   22.37      SUBAREA RUNOFF(CFS) =   15.03
  EFFECTIVE AREA(ACRES) =     57.35    AREA-AVERAGED Fm(INCH/HR) =  0.66
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.88
  TOTAL AREA(ACRES) =     57.35        PEAK FLOW RATE(CFS) =      38.48

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.51   HALFSTREET FLOOD WIDTH(FEET) =  18.75
  FLOW VELOCITY(FEET/SEC.) =  4.96   DEPTH*VELOCITY(FT*FT/SEC.) =   2.55
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20916.00 =  3008.72 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020916.0 TO NODE LR020917.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1700.00  DOWNSTREAM ELEVATION(FEET) = 1672.00
  STREET LENGTH(FEET) =   576.79   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
```

```
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      44.75
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.50
    HALFSTREET FLOOD WIDTH(FEET) =   18.08
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.16
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.09
  STREET FLOW TRAVEL TIME(MIN.) =   1.56   Tc(MIN.) =  25.14
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.348
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.43      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       16.04      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.85
  SUBAREA AREA(ACRES) =   19.47      SUBAREA RUNOFF(CFS) =   12.52
  EFFECTIVE AREA(ACRES) =     76.82    AREA-AVERAGED Fm(INCH/HR) =  0.65
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =     76.82        PEAK FLOW RATE(CFS) =      48.28

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.51   HALFSTREET FLOOD WIDTH(FEET) =  18.56
  FLOW VELOCITY(FEET/SEC.) =  6.33   DEPTH*VELOCITY(FT*FT/SEC.) =   3.24
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20917.00 =  3585.51 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020917.0 TO NODE LR020918.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1672.00  DOWNSTREAM ELEVATION(FEET) = 1655.00
  STREET LENGTH(FEET) =   727.03   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.89

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      54.56
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
```



```
    STREET FLOW DEPTH(FEET) =  0.63
    HALFSTREET FLOOD WIDTH(FEET) =   23.39
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.82
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.02
  STREET FLOW TRAVEL TIME(MIN.) =   2.51   Tc(MIN.) =  27.65
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.273
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       12.63      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        5.91      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   18.54      SUBAREA RUNOFF(CFS) =   12.56
  EFFECTIVE AREA(ACRES) =     95.36    AREA-AVERAGED Fm(INCH/HR) =  0.62
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     95.36        PEAK FLOW RATE(CFS) =      55.66

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.63   HALFSTREET FLOOD WIDTH(FEET) =  23.57
  FLOW VELOCITY(FEET/SEC.) =  4.84   DEPTH*VELOCITY(FT*FT/SEC.) =   3.05
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20918.00 =  4312.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020918.0 TO NODE LR020919.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1655.00  DOWNSTREAM ELEVATION(FEET) = 1640.00
  STREET LENGTH(FEET) =   577.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.86

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      59.14
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.63
    HALFSTREET FLOOD WIDTH(FEET) =   23.69
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.10
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.22
  STREET FLOW TRAVEL TIME(MIN.) =   1.89   Tc(MIN.) =  29.54
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.224
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
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     LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)   CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        9.91      0.75      0.60    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        0.10      0.63      1.00    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   10.01      SUBAREA RUNOFF(CFS) =    6.97
  EFFECTIVE AREA(ACRES) =    105.37    AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =    105.37        PEAK FLOW RATE(CFS) =      58.38

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.63   HALFSTREET FLOOD WIDTH(FEET) =  23.57
  FLOW VELOCITY(FEET/SEC.) =  5.08   DEPTH*VELOCITY(FT*FT/SEC.) =   3.20
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20919.00 =  4890.04 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020919.0 TO NODE LR020920.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1640.00  DOWNSTREAM ELEVATION(FEET) = 1600.00
  STREET LENGTH(FEET) =  1346.52   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      69.06
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.65
    HALFSTREET FLOOD WIDTH(FEET) =   24.51
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.57
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.61
  STREET FLOW TRAVEL TIME(MIN.) =   4.03   Tc(MIN.) =  33.57
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.134
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)   CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.53      0.75      0.60    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B       10.24      0.63      1.00    65
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       33.53      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.72
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  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.89
  SUBAREA AREA(ACRES) =   48.30      SUBAREA RUNOFF(CFS) =   21.32
  EFFECTIVE AREA(ACRES) =    153.67    AREA-AVERAGED Fm(INCH/HR) =  0.62
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =    153.67        PEAK FLOW RATE(CFS) =      71.14

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.65   HALFSTREET FLOOD WIDTH(FEET) =  24.80
  FLOW VELOCITY(FEET/SEC.) =  5.61   DEPTH*VELOCITY(FT*FT/SEC.) =   3.67
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20920.00 =  6236.56 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020920.0 TO NODE LR020920.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  33.57
  RAINFALL INTENSITY(INCH/HR) =   1.13
  AREA-AVERAGED Fm(INCH/HR) =  0.62
  AREA-AVERAGED Fp(INCH/HR) =  0.74
  AREA-AVERAGED Ap =  0.84
  EFFECTIVE STREAM AREA(ACRES) =   153.67
  TOTAL STREAM AREA(ACRES) =   153.67
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     71.14

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     77.80  23.47    1.405  0.75( 0.56) 0.75   102.8 LR020900.0
      2     71.14  33.57    1.134  0.74( 0.62) 0.84   153.7 LR020910.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    148.94  23.47    1.405  0.74( 0.59) 0.80   210.3 LR020900.0
      2    123.82  33.57    1.134  0.74( 0.60) 0.80   256.5 LR020910.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    148.94    Tc(MIN.) =    23.47
  EFFECTIVE AREA(ACRES) =   210.27   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =    256.49
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20920.00 =  6236.56 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020920.0 TO NODE LR020921.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
```

```
==============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1600.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1580.00
  FLOW LENGTH(FEET) =   766.09   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  57.0 INCH PIPE IS  25.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.63
  PIPE-FLOW(CFS) =    148.94
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.69    Tc(MIN.) =  24.16
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.381
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        0.05      0.63      1.00    65
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       11.48      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       56.14      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   67.67      SUBAREA RUNOFF(CFS) =   52.97
  EFFECTIVE AREA(ACRES) =    277.94    AREA-AVERAGED Fm(INCH/HR) =  0.57
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.77
  TOTAL AREA(ACRES) =    324.16        PEAK FLOW RATE(CFS) =    202.17

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 26.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   53.23
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.61
    HALFSTREET FLOOD WIDTH(FEET) =   22.69
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.99
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.05

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    202.17  24.16    1.381  0.74( 0.57) 0.77   277.9 LR020900.0
      2    157.52  34.29    1.119  0.74( 0.58) 0.78   324.2 LR020910.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    202.17  Tc(MIN.) =  24.16
  AREA-AVERAGED Fm(INCH/HR) =  0.57  AREA-AVERAGED Fp(INCH/HR) =  0.74
  AREA-AVERAGED Ap =  0.77  EFFECTIVE AREA(ACRES) =    277.94
```



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  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20921.00 =  7002.65 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020921.0 TO NODE LR020922.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1580.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1560.00
  FLOW LENGTH(FEET) =  1453.35   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  75.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  75.0 INCH PIPE IS  31.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.64
  PIPE-FLOW(CFS) =    202.17
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.46    Tc(MIN.) =  25.62
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20922.00 =  8456.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020922.0 TO NODE LR020922.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  25.62
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.333
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       10.56      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       31.42      0.75      0.70    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B       17.53      0.75      0.50    56
  MOBILE HOME PARK           B       16.71      0.75      0.25    56
  COMMERCIAL                 B        2.07      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.53
  SUBAREA AREA(ACRES) =   78.29      SUBAREA RUNOFF(CFS) =   66.01
  EFFECTIVE AREA(ACRES) =    356.23   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =    402.45       PEAK FLOW RATE(CFS) =     230.51

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    255.37  25.71    1.330  0.74( 0.53) 0.72   356.2 LR020900.0
      2    197.17  35.94    1.088  0.74( 0.54) 0.73   402.4 LR020910.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    255.37  Tc(MIN.) =  25.71
  AREA-AVERAGED Fm(INCH/HR) =  0.53  AREA-AVERAGED Fp(INCH/HR) =  0.74
  AREA-AVERAGED Ap =  0.72  EFFECTIVE AREA(ACRES) =    356.23
```

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****************************************************************************
  FLOW PROCESS FROM NODE LR020922.0 TO NODE LR020923.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1560.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1490.00
  FLOW LENGTH(FEET) =  1505.73   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  28.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  27.92
  PIPE-FLOW(CFS) =    255.37
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.95    Tc(MIN.) =  26.66
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.302
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        6.04      0.75      0.50    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       30.00      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.58
  SUBAREA AREA(ACRES) =   36.04      SUBAREA RUNOFF(CFS) =   28.07
  EFFECTIVE AREA(ACRES) =    392.27    AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =    438.49        PEAK FLOW RATE(CFS) =    274.20

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  6.0       STREET HALFWIDTH(FEET) = 18.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.69
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   18.83
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.40
    HALFSTREET FLOOD WIDTH(FEET) =   13.59
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.79
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.91

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    274.20  26.66    1.302  0.74( 0.52) 0.70   392.3 LR020900.0
      2    211.15  36.96    1.070  0.74( 0.53) 0.72   438.5 LR020910.0
  NEW PEAK FLOW DATA ARE:
```



```
  PEAK FLOW RATE(CFS) =    274.20  Tc(MIN.) =  26.66
  AREA-AVERAGED Fm(INCH/HR) =  0.52  AREA-AVERAGED Fp(INCH/HR) =  0.74
  AREA-AVERAGED Ap =  0.70  EFFECTIVE AREA(ACRES) =    392.27
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20923.00 =  9961.73 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020923.0 TO NODE LR020924.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1490.00  DOWNSTREAM(FEET) =  1440.00
  FLOW LENGTH(FEET) =  1358.44   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   4.00   GIVEN BOX HEIGHT(FEET) =   4.00
  FLOWDEPTH IN BOX IS  2.99 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  22.96
  BOX-FLOW(CFS) =    274.20
  BOX-FLOW TRAVEL TIME(MIN.) =   0.99    Tc(MIN.) =  27.65
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20924.00 = 11320.17 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020924.0 TO NODE LR020924.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  27.65
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.273
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        6.19      0.75      0.50    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       35.81      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.59
  SUBAREA AREA(ACRES) =   42.00      SUBAREA RUNOFF(CFS) =   31.59
  EFFECTIVE AREA(ACRES) =    434.27   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =    480.49        PEAK FLOW RATE(CFS) =     295.89

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    296.54  27.59    1.275  0.75( 0.52) 0.69   434.3 LR020900.0
      2    228.25  37.89    1.054  0.74( 0.53) 0.71   480.5 LR020910.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    296.54  Tc(MIN.) =  27.59
  AREA-AVERAGED Fm(INCH/HR) =  0.52  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.69  EFFECTIVE AREA(ACRES) =    434.27

****************************************************************************
  FLOW PROCESS FROM NODE LR020924.0 TO NODE LR020939.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
```

```
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1440.00  DOWNSTREAM(FEET) =  1409.00
  FLOW LENGTH(FEET) =  1153.84   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   4.00   GIVEN BOX HEIGHT(FEET) =   4.00
  *GIVEN BOX HEIGHT(FEET) =   4.00   ESTIMATED BOX BASEWIDTH(FEET) =    4.46
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  16.62
  BOX-FLOW(CFS) =    296.54
  BOX-FLOW TRAVEL TIME(MIN.) =   1.16    Tc(MIN.) =  28.74
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20939.00 = 12474.01 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020939.0 TO NODE LR020939.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN) =  28.74
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.244
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        2.86      0.75      0.50    56
  SCHOOL                     B        0.48      0.75      0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       11.63      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.58
  SUBAREA AREA(ACRES) =   14.97      SUBAREA RUNOFF(CFS) =   10.91
  EFFECTIVE AREA(ACRES) =    449.24   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =    495.46       PEAK FLOW RATE(CFS) =     296.54
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

****************************************************************************
  FLOW PROCESS FROM NODE LR020939.0 TO NODE LR020939.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==========================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  28.74
  RAINFALL INTENSITY(INCH/HR) =   1.24
  AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.69
  EFFECTIVE STREAM AREA(ACRES) =   449.24
  TOTAL STREAM AREA(ACRES) =   495.46
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    296.54

****************************************************************************
  FLOW PROCESS FROM NODE LR020930.0 TO NODE LR020931.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
```



```
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   975.69
  ELEVATION DATA: UPSTREAM(FEET) =   1650.00  DOWNSTREAM(FEET) =   1625.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.455
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.962
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        8.68      0.75      0.60    56   13.46
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     11.82
  TOTAL AREA(ACRES) =      8.68   PEAK FLOW RATE(CFS) =     11.82

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

****************************************************************************
  FLOW PROCESS FROM NODE LR020931.0 TO NODE LR020932.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
==========================================================================
  UPSTREAM ELEVATION(FEET) = 1625.00  DOWNSTREAM ELEVATION(FEET) = 1610.00
  STREET LENGTH(FEET) =   500.18   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.80

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      12.78
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.38
    HALFSTREET FLOOD WIDTH(FEET) =   12.65
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.72
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.41
  STREET FLOW TRAVEL TIME(MIN.) =   2.24   Tc(MIN.) =  15.70
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.789
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.59      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    1.59      SUBAREA RUNOFF(CFS) =    1.92
  EFFECTIVE AREA(ACRES) =     10.27    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     10.27        PEAK FLOW RATE(CFS) =      12.38
```

```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.38   HALFSTREET FLOOD WIDTH(FEET) =  12.49
  FLOW VELOCITY(FEET/SEC.) =  3.69   DEPTH*VELOCITY(FT*FT/SEC.) =   1.39
  LONGEST FLOWPATH FROM NODE  20930.00 TO NODE  20932.00 =  1475.87 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020932.0 TO NODE LR020933.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1610.00  DOWNSTREAM ELEVATION(FEET) = 1560.00
  STREET LENGTH(FEET) =  1367.05   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.76

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      29.99
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.47
    HALFSTREET FLOOD WIDTH(FEET) =   17.18
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.88
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.29
  STREET FLOW TRAVEL TIME(MIN.) =   4.66   Tc(MIN.) =  20.36
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.530
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       12.11      0.75      0.60    56
  SCHOOL                     B       22.59      0.75      0.60    56
  PUBLIC PARK                B        1.47      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.61
  SUBAREA AREA(ACRES) =   36.17      SUBAREA RUNOFF(CFS) =   34.95
  EFFECTIVE AREA(ACRES) =     46.44    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.61
  TOTAL AREA(ACRES) =     46.44        PEAK FLOW RATE(CFS) =      44.94

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.52   HALFSTREET FLOOD WIDTH(FEET) =  18.99
  FLOW VELOCITY(FEET/SEC.) =  5.66   DEPTH*VELOCITY(FT*FT/SEC.) =   2.94
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
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```
         AND L = 1367.1 FT WITH ELEVATION-DROP =  50.0 FT, IS   46.6 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20933.00
  LONGEST FLOWPATH FROM NODE  20930.00 TO NODE  20933.00 =  2842.92 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020933.0 TO NODE LR020934.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1560.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1510.00
  FLOW LENGTH(FEET) =  1450.00   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  14.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.97
  PIPE-FLOW(CFS) =     44.94
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.51    Tc(MIN.) =  21.88
  LONGEST FLOWPATH FROM NODE  20930.00 TO NODE  20934.00 =  4292.92 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020934.0 TO NODE LR020934.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.88
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.466
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       26.74      0.75      0.60    56
  PUBLIC PARK                B        9.16      0.75      0.85    56
  SCHOOL                     B        6.76      0.75      0.60    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        6.64      0.63      1.00    65
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.77      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.73
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   52.07      SUBAREA RUNOFF(CFS) =   44.84
  EFFECTIVE AREA(ACRES) =     98.51   AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.66
  TOTAL AREA(ACRES) =     98.51       PEAK FLOW RATE(CFS) =      87.09

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

****************************************************************************
  FLOW PROCESS FROM NODE LR020934.0 TO NODE LR020935.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1510.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1485.00
```

```
  FLOW LENGTH(FEET) =   871.47   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  18.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.63
  PIPE-FLOW(CFS) =     87.09
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.82    Tc(MIN.) =  22.70
  LONGEST FLOWPATH FROM NODE  20930.00 TO NODE  20935.00 =  5164.39 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020935.0 TO NODE LR020935.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  22.70
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.433
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       67.33      0.75      0.60    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        8.70      0.63      1.00    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.73
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.65
  SUBAREA AREA(ACRES) =   76.03      SUBAREA RUNOFF(CFS) =   65.96
  EFFECTIVE AREA(ACRES) =    174.54   AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.65
  TOTAL AREA(ACRES) =    174.54       PEAK FLOW RATE(CFS) =     150.19

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

****************************************************************************
  FLOW PROCESS FROM NODE LR020935.0 TO NODE LR020936.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1485.00  DOWNSTREAM(FEET) =  1465.00
  FLOW LENGTH(FEET) =   799.10   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   3.00   GIVEN BOX HEIGHT(FEET) =   6.00
  FLOWDEPTH IN BOX IS  2.99 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  16.77
  BOX-FLOW(CFS) =    150.19
  BOX-FLOW TRAVEL TIME(MIN.) =   0.79    Tc(MIN.) =  23.49
  LONGEST FLOWPATH FROM NODE  20930.00 TO NODE  20936.00 =  5963.49 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020936.0 TO NODE LR020936.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  23.49
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.404
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```



```
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B      101.89      0.75      0.60    56
  COMMERCIAL                 B        1.19      0.75      0.10    56
  MOBILE HOME PARK           B       18.61      0.75      0.25    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        2.78      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.54
  SUBAREA AREA(ACRES) =  124.47      SUBAREA RUNOFF(CFS) =  111.99
  EFFECTIVE AREA(ACRES) =    299.01   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.61
  TOTAL AREA(ACRES) =    299.01       PEAK FLOW RATE(CFS) =     257.59

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

****************************************************************************
  FLOW PROCESS FROM NODE LR020936.0 TO NODE LR020937.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1465.00  DOWNSTREAM(FEET) =  1440.00
  FLOW LENGTH(FEET) =   712.54   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   4.00   GIVEN BOX HEIGHT(FEET) =   4.00
  FLOWDEPTH IN BOX IS  2.90 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  22.23
  BOX-FLOW(CFS) =    257.59
  BOX-FLOW TRAVEL TIME(MIN.) =   0.53    Tc(MIN.) =  24.03
  LONGEST FLOWPATH FROM NODE  20930.00 TO NODE  20937.00 =  6676.03 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020937.0 TO NODE LR020937.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  24.03
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.385
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        6.69      0.75      0.60    56
  MOBILE HOME PARK           B       28.27      0.75      0.25    56
  COMMERCIAL                 B        1.13      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.31
  SUBAREA AREA(ACRES) =   36.09      SUBAREA RUNOFF(CFS) =   37.46
  EFFECTIVE AREA(ACRES) =    335.10   AREA-AVERAGED Fm(INCH/HR) =  0.42
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.57
  TOTAL AREA(ACRES) =    335.10       PEAK FLOW RATE(CFS) =     289.99

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

****************************************************************************
  FLOW PROCESS FROM NODE LR020937.0 TO NODE LR020938.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1440.00  DOWNSTREAM(FEET) =  1415.00
  FLOW LENGTH(FEET) =   983.49   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   4.00   GIVEN BOX HEIGHT(FEET) =   4.00
  *GIVEN BOX HEIGHT(FEET) =   4.00   ESTIMATED BOX BASEWIDTH(FEET) =    4.48
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  16.18
  BOX-FLOW(CFS) =    289.99
  BOX-FLOW TRAVEL TIME(MIN.) =   1.01    Tc(MIN.) =  25.04
  LONGEST FLOWPATH FROM NODE  20930.00 TO NODE  20938.00 =  7659.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020938.0 TO NODE LR020938.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  25.04
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.351
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        3.30      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       20.77      0.75      0.60    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B       10.89      0.75      0.50    56
  MOBILE HOME PARK           B       29.98      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
  SUBAREA AREA(ACRES) =   64.94      SUBAREA RUNOFF(CFS) =   61.66
  EFFECTIVE AREA(ACRES) =    400.04   AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.54
  TOTAL AREA(ACRES) =    400.04       PEAK FLOW RATE(CFS) =     341.42

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

****************************************************************************
  FLOW PROCESS FROM NODE LR020938.0 TO NODE LR020939.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1415.00  DOWNSTREAM(FEET) =  1409.00
  FLOW LENGTH(FEET) =   668.85   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   4.00   GIVEN BOX HEIGHT(FEET) =   4.00
  *GIVEN BOX HEIGHT(FEET) =   4.00   ESTIMATED BOX BASEWIDTH(FEET) =    7.67
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  11.12
  BOX-FLOW(CFS) =    341.42
  BOX-FLOW TRAVEL TIME(MIN.) =   1.00    Tc(MIN.) =  26.04
  LONGEST FLOWPATH FROM NODE  20930.00 TO NODE  20939.00 =  8328.37 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020939.0 TO NODE LR020939.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  26.04
```



```
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.320
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        6.87      0.75      0.50    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.91      0.75      0.60    56
  SCHOOL                     B        3.23      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.54
  SUBAREA AREA(ACRES) =   11.01      SUBAREA RUNOFF(CFS) =    9.09
  EFFECTIVE AREA(ACRES) =    411.05   AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.54
  TOTAL AREA(ACRES) =    411.05       PEAK FLOW RATE(CFS) =     341.42
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

****************************************************************************
  FLOW PROCESS FROM NODE LR020939.0 TO NODE LR020939.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  26.04
  RAINFALL INTENSITY(INCH/HR) =   1.32
  AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.74
  AREA-AVERAGED Ap =  0.54
  EFFECTIVE STREAM AREA(ACRES) =   411.05
  TOTAL STREAM AREA(ACRES) =   411.05
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    341.42

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    296.54  28.74    1.244  0.75( 0.51) 0.69   449.2 LR020900.0
      1    229.41  38.87    1.038  0.74( 0.52) 0.70   495.5 LR020910.0
      2    341.42  26.04    1.320  0.74( 0.40) 0.54   411.1 LR020930.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    637.96  26.04    1.320  0.74( 0.46) 0.62   818.1 LR020930.0
      2    609.70  28.74    1.244  0.74( 0.46) 0.62   860.3 LR020900.0
      3    465.83  38.87    1.038  0.74( 0.47) 0.63   906.5 LR020910.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    637.96    Tc(MIN.) =    26.04
  EFFECTIVE AREA(ACRES) =   818.07   AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.62
```

```
  TOTAL AREA(ACRES) =    906.51
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20939.00 = 12474.01 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020939.0 TO NODE LR020939.0 IS CODE =  71
----------------------------------------------------------------------------
  >>>>>PEAK FLOW RATE ESTIMATOR CHANGED TO UNIT-HYDROGRAPH METHOD<<<<<
  >>>>>USING TIME-OF-CONCENTRATION OF LONGEST FLOWPATH<<<<<
============================================================================
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.37;6H= 1.92;24H= 3.70
  S-GRAPH: VALLEY(DEV.)= 81.6%;VALLEY(UNDEV.)/DESERT= 18.4%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.48; LAG(HR) = 0.38; Fm(INCH/HR) = 0.47; Ybar = 0.57
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    906.51
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20939.00 = 12474.01 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0351; Lca/L=0.4,n=.0314; Lca/L=0.5,n=.0289;Lca/L=0.6,n=.0269
  TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     129.18
  UNIT-HYDROGRAPH METHOD PEAK FLOW RATE(CFS) =    702.75
  TOTAL PEAK FLOW RATE(CFS) =    702.75 (SOURCE FLOW INCLUDED)
  RATIONAL METHOD PEAK FLOW RATE(CFS) =    637.96
   (UPSTREAM NODE PEAK FLOW RATE(CFS) =    637.96)
  PEAK FLOW RATE(CFS) USED =    702.75

****************************************************************************
  FLOW PROCESS FROM NODE LR020939.0 TO NODE LR020940.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1409.00  DOWNSTREAM(FEET) =  1370.00
  FLOW LENGTH(FEET) =  2606.42   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   4.00   GIVEN BOX HEIGHT(FEET) =   4.00
  *GIVEN BOX HEIGHT(FEET) =   4.00   ESTIMATED BOX BASEWIDTH(FEET) =   11.31
  ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  15.53
  BOX-FLOW(CFS) =    702.75
  BOX-FLOW TRAVEL TIME(MIN.) =   2.80    Tc(MIN.) =  31.54
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20940.00 = 15080.43 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020940.0 TO NODE LR020940.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  31.54
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.177
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  SCHOOL                     B       57.18      0.75      0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       27.41      0.75      0.60    56
  MOBILE HOME PARK           B        4.75      0.75      0.25    56
  COMMERCIAL                 B        4.99      0.75      0.10    56
```



```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.56
  SUBAREA AREA(ACRES) =   94.33
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.37;6H= 1.92;24H= 3.70
  S-GRAPH: VALLEY(DEV.)= 83.3%;VALLEY(UNDEV.)/DESERT= 16.7%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.53; LAG(HR) = 0.42; Fm(INCH/HR) = 0.46; Ybar = 0.57
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1000.84
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20940.00 = 15080.43 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0327; Lca/L=0.4,n=.0293; Lca/L=0.5,n=.0269;Lca/L=0.6,n=.0251
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     144.10
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    730.82
  TOTAL AREA(ACRES) =   1000.84       PEAK FLOW RATE(CFS) =     730.82

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

****************************************************************************
  FLOW PROCESS FROM NODE LR020940.0 TO NODE LR020940.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020852.0 TO NODE LR020852.0 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20852.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1943.30    Tc(MIN.) =  31.86
  AREA-AVERAGED Fm(INCH/HR) =  0.49    Ybar = 0.58
  TOTAL AREA(ACRES) =    2992.92
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20852.00 = 24422.29 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020852.0 TO NODE LR020852.0 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1943.30    Tc(MIN.) =  31.86
  AREA-AVERAGED Fm(INCH/HR) =  0.49    Ybar = 0.58
  TOTAL AREA(ACRES) =    2992.92
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20852.00 = 24422.29 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020852.0 TO NODE LR020852.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR020852.0 TO NODE LR020940.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1413.00  DOWNSTREAM(FEET) =  1370.00
  FLOW LENGTH(FEET) =  2071.80   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  12.00   GIVEN BOX HEIGHT(FEET) =  10.00
  FLOWDEPTH IN BOX IS  5.31 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  30.51
  BOX-FLOW(CFS) =   1943.30
  BOX-FLOW TRAVEL TIME(MIN.) =   1.13    Tc(MIN.) =  32.99
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20940.00 = 26494.09 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020940.0 TO NODE LR020940.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     1943.30    Tc(MIN.) =  32.99
  AREA-AVERAGED Fm(INCH/HR) =  0.49    Ybar = 0.58
  TOTAL AREA(ACRES) =    2992.92
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20940.00 = 26494.09 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =      730.82    Tc(MIN.) =  31.54
  AREA-AVERAGED Fm(INCH/HR) =  0.46    Ybar = 0.57
  TOTAL AREA(ACRES) =    1000.84
  LONGEST FLOWPATH FROM NODE  20910.00 TO NODE  20940.00 = 15080.43 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.37;6H= 1.94;24H= 3.88
  S-GRAPH: VALLEY(DEV.)= 90.1%;VALLEY(UNDEV.)/DESERT=  9.9%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.55; LAG(HR) = 0.44; Fm(INCH/HR) = 0.48; Ybar = 0.58
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.82; 30M = 0.82; 1HR = 0.82;
  3HR = 0.97; 6HR = 0.99; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   3993.76
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20940.00 = 26494.09 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0224; Lca/L=0.4,n=.0201; Lca/L=0.5,n=.0184;Lca/L=0.6,n=.0172
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     571.84
  PEAK FLOW RATE(CFS) =    2381.17

****************************************************************************
  FLOW PROCESS FROM NODE LR020940.0 TO NODE LR020940.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020940.0 TO NODE LR020955.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```



```
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1370.00  DOWNSTREAM(FEET) =  1360.00
  FLOW LENGTH(FEET) =   618.86   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  16.00   GIVEN BOX HEIGHT(FEET) =  10.00
  FLOWDEPTH IN BOX IS  5.15 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  28.88
  BOX-FLOW(CFS) =   2381.17
  BOX-FLOW TRAVEL TIME(MIN.) =   0.36    Tc(MIN.) =  33.35
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20955.00 = 27112.95 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020955.0 TO NODE LR020955.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =    2381.17    Tc(MIN.) =  33.35
  AREA-AVERAGED Fm(INCH/HR) =  0.48   Ybar = 0.58
  TOTAL AREA(ACRES) =    3993.76

****************************************************************************
  FLOW PROCESS FROM NODE LR020950.0 TO NODE LR020951.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   667.18
  ELEVATION DATA: UPSTREAM(FEET) =   1438.00  DOWNSTREAM(FEET) =   1417.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.046
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.490
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  MOBILE HOME PARK           B        4.45      0.75       0.25    56    9.05
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.19      0.75       0.60    56   11.09
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.32
  SUBAREA RUNOFF(CFS) =     11.41
  TOTAL AREA(ACRES) =      5.64   PEAK FLOW RATE(CFS) =     11.41

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

****************************************************************************
  FLOW PROCESS FROM NODE LR020951.0 TO NODE LR020952.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1417.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1409.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   191.07
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
```

```
  MAXIMUM DEPTH(FEET) =   1.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.413
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.46      0.75      0.60    56
  MOBILE HOME PARK           B        2.56      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.30
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     14.38
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.59
  AVERAGE FLOW DEPTH(FEET) =   0.49   FLOOD WIDTH(FEET) =   19.06
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.48   Tc(MIN.) =   9.53
  SUBAREA AREA(ACRES) =    3.02       SUBAREA RUNOFF(CFS) =    5.94
  EFFECTIVE AREA(ACRES) =    8.66     AREA-AVERAGED Fm(INCH/HR) =   0.24
  AREA-AVERAGED Fp(INCH/HR) =   0.75  AREA-AVERAGED Ap =   0.32
  TOTAL AREA(ACRES) =      8.66         PEAK FLOW RATE(CFS) =      16.96

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.51   FLOOD WIDTH(FEET) =   21.45
  FLOW VELOCITY(FEET/SEC.) =   6.55   DEPTH*VELOCITY(FT*FT/SEC) =   3.32
  LONGEST FLOWPATH FROM NODE  20950.00 TO NODE  20952.00 =   858.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020952.0 TO NODE LR020953.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1409.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1404.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   204.94
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.317
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.20      0.75      0.60    56
  MOBILE HOME PARK           B        1.83      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.39
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     19.72
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.10
  AVERAGE FLOW DEPTH(FEET) =   0.56   FLOOD WIDTH(FEET) =   27.57
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.67   Tc(MIN.) =  10.20
  SUBAREA AREA(ACRES) =    3.03       SUBAREA RUNOFF(CFS) =    5.52
  EFFECTIVE AREA(ACRES) =   11.69     AREA-AVERAGED Fm(INCH/HR) =   0.25
  AREA-AVERAGED Fp(INCH/HR) =   0.75  AREA-AVERAGED Ap =   0.34
  TOTAL AREA(ACRES) =     11.69         PEAK FLOW RATE(CFS) =      21.73

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
```



```
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.57   FLOOD WIDTH(FEET) =   29.06
  FLOW VELOCITY(FEET/SEC.) =   5.14   DEPTH*VELOCITY(FT*FT/SEC) =   2.94
  LONGEST FLOWPATH FROM NODE  20950.00 TO NODE  20953.00 =  1063.19 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020953.0 TO NODE LR020954.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1404.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1400.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   260.93
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.188
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.52      0.75      0.60    56
  MOBILE HOME PARK           B        0.19      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.58
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     24.66
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.28
  AVERAGE FLOW DEPTH(FEET) =   0.62   FLOOD WIDTH(FEET) =   34.74
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   1.02   Tc(MIN.) =  11.21
  SUBAREA AREA(ACRES) =    3.71       SUBAREA RUNOFF(CFS) =    5.85
  EFFECTIVE AREA(ACRES) =   15.40     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.75  AREA-AVERAGED Ap =   0.39
  TOTAL AREA(ACRES) =     15.40         PEAK FLOW RATE(CFS) =      26.24

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.63   FLOOD WIDTH(FEET) =   35.78
  FLOW VELOCITY(FEET/SEC.) =   4.32   DEPTH*VELOCITY(FT*FT/SEC) =   2.71
  LONGEST FLOWPATH FROM NODE  20950.00 TO NODE  20954.00 =  1324.12 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020954.0 TO NODE LR020955.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1400.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1360.00
  FLOW LENGTH(FEET) =  1961.31   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  84.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  84.0 INCH PIPE IS   9.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.47
```

```
  PIPE-FLOW(CFS) =     26.24
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   3.12    Tc(MIN.) =  14.34
  LONGEST FLOWPATH FROM NODE  20950.00 TO NODE  20955.00 =  3285.43 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020955.0 TO NODE LR020955.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  14.34
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.888
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        0.07      0.75       0.85    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        7.87      0.75       0.60    56
  MOBILE HOME PARK           B        1.54      0.75       0.25    56
  COMMERCIAL                 B        9.50      0.75       0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.32
  SUBAREA AREA(ACRES) =   18.98      SUBAREA RUNOFF(CFS) =   28.14
  EFFECTIVE AREA(ACRES) =     34.38   AREA-AVERAGED Fm(INCH/HR) =  0.27
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.35
  TOTAL AREA(ACRES) =     34.38       PEAK FLOW RATE(CFS) =      50.22

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

****************************************************************************
  FLOW PROCESS FROM NODE LR020955.0 TO NODE LR020955.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  14.34
  RAINFALL INTENSITY(INCH/HR) =   1.89
  AREA-AVERAGED Fm(INCH/HR) =  0.27
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.35
  EFFECTIVE STREAM AREA(ACRES) =    34.38
  TOTAL STREAM AREA(ACRES) =    34.38
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     50.22
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1      2381.17   33.35     3993.76  LR020620.0
     2        50.22   14.34       34.38  LR020950.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.37;6H= 1.94;24H= 3.88
  S-GRAPH: VALLEY(DEV.)= 90.2%;VALLEY(UNDEV.)/DESERT=  9.8%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.56; LAG(HR) = 0.44; Fm(INCH/HR) = 0.48; Ybar = 0.58
```



```
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.82; 30M = 0.82; 1HR = 0.82;
  3HR = 0.97; 6HR = 0.99; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   4028.14
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20955.00 = 27112.95 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0222; Lca/L=0.4,n=.0199; Lca/L=0.5,n=.0183;Lca/L=0.6,n=.0171
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     578.76
  PEAK FLOW RATE(CFS) =   2385.54

****************************************************************************
  FLOW PROCESS FROM NODE LR020955.0 TO NODE LR020955.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020539.0 TO NODE LR020539.0 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20539.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2092.97    Tc(MIN.) =  58.28
  AREA-AVERAGED Fm(INCH/HR) =  0.55    Ybar = 0.62
  TOTAL AREA(ACRES) =    5998.28
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20539.00 = 35104.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020539.0 TO NODE LR020539.0 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2092.97    Tc(MIN.) =  58.28
  AREA-AVERAGED Fm(INCH/HR) =  0.55    Ybar = 0.62
  TOTAL AREA(ACRES) =    5998.28
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20539.00 = 35104.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020539.0 TO NODE LR020539.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020539.0 TO NODE LR020955.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1366.00  DOWNSTREAM(FEET) =   1360.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   385.80   CHANNEL SLOPE =  0.0156
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   6.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   2092.97
  FLOW VELOCITY(FEET/SEC.) =  24.44   FLOW DEPTH(FEET) =   4.20
```

```
  TRAVEL TIME(MIN.) =   0.26   Tc(MIN.) =  58.54
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20955.00 = 35490.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020955.0 TO NODE LR020955.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     2092.97    Tc(MIN.) =  58.54
  AREA-AVERAGED Fm(INCH/HR) =  0.55    Ybar = 0.62
  TOTAL AREA(ACRES) =    5998.28
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20955.00 = 35490.05 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     2385.54    Tc(MIN.) =  33.35
  AREA-AVERAGED Fm(INCH/HR) =  0.48    Ybar = 0.58
  TOTAL AREA(ACRES) =    4028.14
  LONGEST FLOWPATH FROM NODE  20620.00 TO NODE  20955.00 = 27112.95 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.62;1H= 0.81;3H= 1.42;6H= 2.05;24H= 4.21
  S-GRAPH: VALLEY(DEV.)= 68.9%;VALLEY(UNDEV.)/DESERT= 31.1%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.98; LAG(HR) = 0.78; Fm(INCH/HR) = 0.52; Ybar = 0.61
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.67; 30M = 0.68; 1HR = 0.68;
  3HR = 0.94; 6HR = 0.97; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  10026.42
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20955.00 = 35490.05 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0349; Lca/L=0.4,n=.0313; Lca/L=0.5,n=.0287;Lca/L=0.6,n=.0268
  TIME OF PEAK FLOW(HR) = 16.83  RUNOFF VOLUME(AF) =    1423.99
  PEAK FLOW RATE(CFS) =    3242.89

****************************************************************************
  FLOW PROCESS FROM NODE LR020955.0 TO NODE LR020955.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020955.0 TO NODE LR020956.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1360.00  DOWNSTREAM(FEET) =  1350.00
  FLOW LENGTH(FEET) =   666.58   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  23.00   GIVEN BOX HEIGHT(FEET) =  10.00
  FLOWDEPTH IN BOX IS  4.80 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  29.35
  BOX-FLOW(CFS) =   3242.89
  BOX-FLOW TRAVEL TIME(MIN.) =   0.38    Tc(MIN.) =  58.92
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20956.00 = 36156.63 FEET.

****************************************************************************
```



```
  FLOW PROCESS FROM NODE LR020956.0 TO NODE LR020956.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  58.92
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.809
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.80      0.75       0.60    56
  COMMERCIAL                 B       17.13      0.75       0.10    56
  PUBLIC PARK                B        0.39      0.75       0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.24
  SUBAREA AREA(ACRES) =   23.32
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.62;1H= 0.81;3H= 1.42;6H= 2.05;24H= 4.21
  S-GRAPH: VALLEY(DEV.)= 69.0%;VALLEY(UNDEV.)/DESERT= 31.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.98; LAG(HR) = 0.79; Fm(INCH/HR) = 0.52; Ybar = 0.61
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.67; 30M = 0.68; 1HR = 0.68;
  3HR = 0.94; 6HR = 0.97; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  10049.74
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20956.00 = 36156.63 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0345; Lca/L=0.4,n=.0310; Lca/L=0.5,n=.0284;Lca/L=0.6,n=.0265
  TIME OF PEAK FLOW(HR) = 16.83  RUNOFF VOLUME(AF) =    1429.43
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   3245.40
  TOTAL AREA(ACRES) =  10049.74       PEAK FLOW RATE(CFS) =    3245.40

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

****************************************************************************
  FLOW PROCESS FROM NODE LR020956.0 TO NODE LR020968.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1350.00  DOWNSTREAM(FEET) =  1335.00
  FLOW LENGTH(FEET) =   926.11   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  23.00   GIVEN BOX HEIGHT(FEET) =  10.00
  FLOWDEPTH IN BOX IS  4.69 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  30.10
  BOX-FLOW(CFS) =   3245.40
  BOX-FLOW TRAVEL TIME(MIN.) =   0.51    Tc(MIN.) =  59.44
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20968.00 = 37082.74 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020968.0 TO NODE LR020968.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  59.44
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.805
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

```
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.51      0.75      0.60    56
  COMMERCIAL                 B        3.07      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.32
  SUBAREA AREA(ACRES) =    5.58
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.62;1H= 0.81;3H= 1.42;6H= 2.05;24H= 4.21
  S-GRAPH: VALLEY(DEV.)= 69.0%;VALLEY(UNDEV.)/DESERT= 31.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.99; LAG(HR) = 0.79; Fm(INCH/HR) = 0.52; Ybar = 0.61
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.67; 30M = 0.68; 1HR = 0.68;
  3HR = 0.94; 6HR = 0.97; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  10055.32
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20968.00 = 37082.74 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0341; Lca/L=0.4,n=.0305; Lca/L=0.5,n=.0281;Lca/L=0.6,n=.0262
  TIME OF PEAK FLOW(HR) = 16.83  RUNOFF VOLUME(AF) =    1430.60
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   3233.90
  TOTAL AREA(ACRES) =  10055.32       PEAK FLOW RATE(CFS) =    3245.40
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

****************************************************************************
  FLOW PROCESS FROM NODE LR020968.0 TO NODE LR020968.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =    3245.40    Tc(MIN.) =  59.44
  AREA-AVERAGED Fm(INCH/HR) =  0.52   Ybar = 0.61
  TOTAL AREA(ACRES) =   10055.32

****************************************************************************
  FLOW PROCESS FROM NODE LR020960.0 TO NODE LR020961.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   935.10
  ELEVATION DATA: UPSTREAM(FEET) =   1380.00  DOWNSTREAM(FEET) =   1360.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.120
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.327
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        3.18      0.75      0.50    56   12.95
  COMMERCIAL                 B        4.70      0.75      0.10    56   10.12
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.91      0.75      0.60    56   13.72
```



```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.30
  SUBAREA RUNOFF(CFS) =     16.66
  TOTAL AREA(ACRES) =      8.79   PEAK FLOW RATE(CFS) =     16.66

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

****************************************************************************
  FLOW PROCESS FROM NODE LR020961.0 TO NODE LR020962.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1360.00  DOWNSTREAM ELEVATION(FEET) = 1359.00
  STREET LENGTH(FEET) =   280.72   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      20.20
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.57
    HALFSTREET FLOOD WIDTH(FEET) =   21.68
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.99
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.14
  STREET FLOW TRAVEL TIME(MIN.) =   2.35   Tc(MIN.) =  12.47
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.054
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        1.51      0.75      0.50    56
  COMMERCIAL                 B        2.33      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.44      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.29
  SUBAREA AREA(ACRES) =    4.28      SUBAREA RUNOFF(CFS) =    7.07
  EFFECTIVE AREA(ACRES) =     13.07    AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.30
  TOTAL AREA(ACRES) =     13.07        PEAK FLOW RATE(CFS) =      21.56

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.58   HALFSTREET FLOOD WIDTH(FEET) =  22.23
  FLOW VELOCITY(FEET/SEC.) =  2.03   DEPTH*VELOCITY(FT*FT/SEC.) =   1.19
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  LONGEST FLOWPATH FROM NODE  20960.00 TO NODE  20962.00 =  1215.82 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020962.0 TO NODE LR020963.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1359.00  DOWNSTREAM ELEVATION(FEET) = 1358.50
  STREET LENGTH(FEET) =   189.10   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      24.36
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.63
    HALFSTREET FLOOD WIDTH(FEET) =   24.55
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.91
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.20
  STREET FLOW TRAVEL TIME(MIN.) =   1.65   Tc(MIN.) =  14.12
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.906
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        1.24      0.75      0.50    56
  COMMERCIAL                 B        1.91      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.56      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.31
  SUBAREA AREA(ACRES) =    3.71      SUBAREA RUNOFF(CFS) =    5.59
  EFFECTIVE AREA(ACRES) =     16.78    AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.30
  TOTAL AREA(ACRES) =     16.78        PEAK FLOW RATE(CFS) =      25.41

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.64   HALFSTREET FLOOD WIDTH(FEET) =  24.97
  FLOW VELOCITY(FEET/SEC.) =  1.92   DEPTH*VELOCITY(FT*FT/SEC.) =   1.23
  LONGEST FLOWPATH FROM NODE  20960.00 TO NODE  20963.00 =  1404.92 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020963.0 TO NODE LR020964.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
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  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1358.50  DOWNSTREAM ELEVATION(FEET) = 1358.00
  STREET LENGTH(FEET) =   201.59   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      27.94
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.66
    HALFSTREET FLOOD WIDTH(FEET) =   26.19
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.93
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.28
  STREET FLOW TRAVEL TIME(MIN.) =   1.74   Tc(MIN.) =  15.86
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.778
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        1.22      0.75      0.50    56
  COMMERCIAL                 B        1.94      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.45      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.30
  SUBAREA AREA(ACRES) =    3.61      SUBAREA RUNOFF(CFS) =    5.05
  EFFECTIVE AREA(ACRES) =     20.39    AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.30
  TOTAL AREA(ACRES) =     20.39        PEAK FLOW RATE(CFS) =      28.53

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.67   HALFSTREET FLOOD WIDTH(FEET) =  26.44
  FLOW VELOCITY(FEET/SEC.) =  1.94   DEPTH*VELOCITY(FT*FT/SEC.) =   1.30
  LONGEST FLOWPATH FROM NODE  20960.00 TO NODE  20964.00 =  1606.51 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020964.0 TO NODE LR020965.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1358.00  DOWNSTREAM ELEVATION(FEET) = 1357.50
  STREET LENGTH(FEET) =   201.59   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00
```

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 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      30.94
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.69
   HALFSTREET FLOOD WIDTH(FEET) =   27.29
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.98
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.36
 STREET FLOW TRAVEL TIME(MIN.) =   1.70   Tc(MIN.) =  17.56
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.672
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       A        0.14      0.98      0.50    32
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        1.29      0.75      0.50    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.85      0.75      0.60    56
 COMMERCIAL                 B        1.55      0.75      0.10    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.76
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.36
 SUBAREA AREA(ACRES) =    3.83      SUBAREA RUNOFF(CFS) =    4.82
 EFFECTIVE AREA(ACRES) =     24.22    AREA-AVERAGED Fm(INCH/HR) =  0.23
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.31
 TOTAL AREA(ACRES) =     24.22        PEAK FLOW RATE(CFS) =      31.42

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.69   HALFSTREET FLOOD WIDTH(FEET) =  27.41
 FLOW VELOCITY(FEET/SEC.) =  1.99   DEPTH*VELOCITY(FT*FT/SEC.) =   1.37
 LONGEST FLOWPATH FROM NODE  20960.00 TO NODE  20965.00 =  1808.10 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020965.0 TO NODE LR020966.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1357.50  DOWNSTREAM ELEVATION(FEET) = 1357.00
 STREET LENGTH(FEET) =   207.50   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
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 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      34.12
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.71
   HALFSTREET FLOOD WIDTH(FEET) =   28.45
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.02
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.43
 STREET FLOW TRAVEL TIME(MIN.) =   1.72   Tc(MIN.) =  19.27
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.581
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       A        0.74      0.98      0.50    32
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        0.93      0.75      0.50    56
 COMMERCIAL                 B        2.70      0.75      0.10    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.82
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.25
 SUBAREA AREA(ACRES) =    4.37      SUBAREA RUNOFF(CFS) =    5.40
 EFFECTIVE AREA(ACRES) =     28.59    AREA-AVERAGED Fm(INCH/HR) =  0.23
 AREA-AVERAGED Fp(INCH/HR) =  0.76  AREA-AVERAGED Ap =  0.30
 TOTAL AREA(ACRES) =     28.59        PEAK FLOW RATE(CFS) =      34.84

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.71   HALFSTREET FLOOD WIDTH(FEET) =  28.70
 FLOW VELOCITY(FEET/SEC.) =  2.03   DEPTH*VELOCITY(FT*FT/SEC.) =   1.45
 LONGEST FLOWPATH FROM NODE  20960.00 TO NODE  20966.00 =  2015.60 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020966.0 TO NODE LR020967.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1357.00  DOWNSTREAM ELEVATION(FEET) = 1356.00
 STREET LENGTH(FEET) =   341.55   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90
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  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      38.44
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.71
  HALFSTREET FLOOD WIDTH(FEET) =   28.70
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.23
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.60
 STREET FLOW TRAVEL TIME(MIN.) =   2.55   Tc(MIN.) =  21.82
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.468
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       A        2.02      0.98      0.50    32
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        0.32      0.75      0.50    56
 COMMERCIAL                 A        0.04      0.98      0.10    32
 COMMERCIAL                 B        4.03      0.75      0.10    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.89
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.25
 SUBAREA AREA(ACRES) =    6.41      SUBAREA RUNOFF(CFS) =    7.20
 EFFECTIVE AREA(ACRES) =     35.00    AREA-AVERAGED Fm(INCH/HR) =  0.23
 AREA-AVERAGED Fp(INCH/HR) =  0.78  AREA-AVERAGED Ap =  0.29
 TOTAL AREA(ACRES) =     35.00        PEAK FLOW RATE(CFS) =      39.11

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.72   HALFSTREET FLOOD WIDTH(FEET) =  28.94
 FLOW VELOCITY(FEET/SEC.) =  2.24   DEPTH*VELOCITY(FT*FT/SEC.) =   1.61
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  341.5 FT WITH ELEVATION-DROP =   1.0 FT, IS   12.2 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20967.00
 LONGEST FLOWPATH FROM NODE  20960.00 TO NODE  20967.00 =  2357.15 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020967.0 TO NODE LR020968.0 IS CODE =  33
----------------------------------------------------------------------------
 >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
 >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1356.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1335.00
 FLOW LENGTH(FEET) =  1730.15   MANNING'S N =  0.013

 USER SPECIFIED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
 DEPTH OF FLOW IN  42.0 INCH PIPE IS  17.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  10.52
 PIPE-FLOW(CFS) =     39.11
 *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
 PIPEFLOW TRAVEL TIME(MIN.) =   2.91    Tc(MIN.) =  24.73
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.362
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 B       13.57      0.75      0.10    56
 RESIDENTIAL
```



```
 "3-4 DWELLINGS/ACRE"       B        3.04      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.19
 SUBAREA AREA(ACRES) =   16.61      SUBAREA RUNOFF(CFS) =   18.21
 EFFECTIVE AREA(ACRES) =     51.61    AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.77  AREA-AVERAGED Ap =  0.26
 TOTAL AREA(ACRES) =     51.61        PEAK FLOW RATE(CFS) =     53.98

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.37; 6HR = 1.92; 24HR = 3.70

 STREET CROSS-SECTION INFORMATION:
 CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 26.00
 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
 STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   14.87
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.48
  HALFSTREET FLOOD WIDTH(FEET) =   15.89
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.74
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.30
 LONGEST FLOWPATH FROM NODE  20960.00 TO NODE  20968.00 =  4087.30 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR020968.0 TO NODE LR020968.0 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  24.73
 RAINFALL INTENSITY(INCH/HR) =   1.36
 AREA-AVERAGED Fm(INCH/HR) =  0.20
 AREA-AVERAGED Fp(INCH/HR) =  0.77
 AREA-AVERAGED Ap =  0.26
 EFFECTIVE STREAM AREA(ACRES) =    51.61
 TOTAL STREAM AREA(ACRES) =    51.61
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     53.98
 ** CONFLUENCE DATA **
 STREAM      Q        Tc      AREA      HEADWATER
 NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
    1      3245.40   59.44    10055.32  LR020120.0
    2        53.98   24.73       51.61  LR020960.0

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 UNIT-HYDROGRAPH DATA:
 RAINFALL(INCH): 5M= 0.30;30M= 0.62;1H= 0.81;3H= 1.42;6H= 2.05;24H= 4.21
 S-GRAPH: VALLEY(DEV.)= 69.1%;VALLEY(UNDEV.)/DESERT= 30.9%
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
 Tc(HR) = 0.99; LAG(HR) = 0.79; Fm(INCH/HR) = 0.52; Ybar = 0.60
```

```
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.67; 30M = 0.68; 1HR = 0.68;
  3HR = 0.94; 6HR = 0.97; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  10106.93
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20968.00 = 37082.74 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0341; Lca/L=0.4,n=.0305; Lca/L=0.5,n=.0281;Lca/L=0.6,n=.0262
  TIME OF PEAK FLOW(HR) = 16.83  RUNOFF VOLUME(AF) =    1442.27
  PEAK FLOW RATE(CFS) =   3254.97

****************************************************************************
  FLOW PROCESS FROM NODE LR020968.0 TO NODE LR020968.0 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20968.dna
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =  10106.93  TC(MIN.) =     59.44
  AREA-AVERAGED Fm(INCH/HR)=  0.52   Ybar =  0.60
  PEAK FLOW RATE(CFS)   =   3254.97
============================================================================
============================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
         (c) Copyright 1983-2002 Advanced Engineering Software (aes)
             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                          San Bernardino County
                    Transportation/ Flood Control Department

                          Water Resources Division

 ************************ DESCRIPTION OF STUDY *************************
* LR0210ZZ                                                             *
* 10- Year Storm                                                       *
*                                                                      *
 ************************************************************************

  FILE NAME: LR0210ZZ.Z10
  TIME/DATE OF STUDY: 09:58 02/22/2006
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 0.8000

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
```



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 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


************************************************************************
  FLOW PROCESS FROM NODE LR021000.0 TO NODE LR021001.0 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   690.87
  ELEVATION DATA: UPSTREAM(FEET) =   1535.00  DOWNSTREAM(FEET) =   1518.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.815
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.121
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.92      0.75       0.60    56   11.82
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =      8.91
  TOTAL AREA(ACRES) =      5.92   PEAK FLOW RATE(CFS) =      8.91

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

************************************************************************
  FLOW PROCESS FROM NODE LR021001.0 TO NODE LR021002.0 IS CODE =  63
------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
========================================================================
  UPSTREAM ELEVATION(FEET) = 1518.00  DOWNSTREAM ELEVATION(FEET) = 1480.00
  STREET LENGTH(FEET) =   646.60   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
```

```
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.67

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      15.01
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.36
    HALFSTREET FLOOD WIDTH(FEET) =   11.79
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.98
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.80
  STREET FLOW TRAVEL TIME(MIN.) =   2.17   Tc(MIN.) =  13.98
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.917
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        9.22      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    9.22      SUBAREA RUNOFF(CFS) =   12.18
  EFFECTIVE AREA(ACRES) =     15.14    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     15.14        PEAK FLOW RATE(CFS) =      20.01

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.39   HALFSTREET FLOOD WIDTH(FEET) =  13.27
  FLOW VELOCITY(FEET/SEC.) =  5.32   DEPTH*VELOCITY(FT*FT/SEC.) =   2.08
  LONGEST FLOWPATH FROM NODE  21000.00 TO NODE  21002.00 =  1337.47 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021002.0 TO NODE LR021013.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1480.00  DOWNSTREAM(FEET) =   1433.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1375.46   CHANNEL SLOPE =  0.0342
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   1.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     20.01
  FLOW VELOCITY(FEET/SEC.) =   5.38   FLOW DEPTH(FEET) =   0.81
  TRAVEL TIME(MIN.) =   4.26   Tc(MIN.) =  18.24
  LONGEST FLOWPATH FROM NODE  21000.00 TO NODE  21013.00 =  2712.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021013.0 TO NODE LR021013.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  18.24
```



```
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.634
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        7.03      0.75      0.60    56
  SCHOOL                     B        7.98      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   15.01      SUBAREA RUNOFF(CFS) =   16.02
  EFFECTIVE AREA(ACRES) =     30.15   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     30.15       PEAK FLOW RATE(CFS) =      32.17

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

****************************************************************************
  FLOW PROCESS FROM NODE LR021013.0 TO NODE LR021013.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  18.24
  RAINFALL INTENSITY(INCH/HR) =   1.63
  AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.60
  EFFECTIVE STREAM AREA(ACRES) =    30.15
  TOTAL STREAM AREA(ACRES) =    30.15
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     32.17

****************************************************************************
  FLOW PROCESS FROM NODE LR021010.0 TO NODE LR021011.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   911.60
  ELEVATION DATA: UPSTREAM(FEET) =   1490.00  DOWNSTREAM(FEET) =   1462.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.628
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.038
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        7.05      0.75      0.60    56   12.63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     10.08
  TOTAL AREA(ACRES) =      7.05   PEAK FLOW RATE(CFS) =     10.08

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR021011.0 TO NODE LR021012.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1462.00  DOWNSTREAM ELEVATION(FEET) = 1440.00
  STREET LENGTH(FEET) =   809.73   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.83

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      13.28
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.39
    HALFSTREET FLOOD WIDTH(FEET) =   13.12
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.61
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.40
  STREET FLOW TRAVEL TIME(MIN.) =   3.74   Tc(MIN.) =  16.37
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.744
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.37      0.75      0.60    56
  SCHOOL                     B        1.10      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    5.47      SUBAREA RUNOFF(CFS) =    6.38
  EFFECTIVE AREA(ACRES) =     12.52    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     12.52        PEAK FLOW RATE(CFS) =      14.60

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.40   HALFSTREET FLOOD WIDTH(FEET) =  13.66
  FLOW VELOCITY(FEET/SEC.) =  3.68   DEPTH*VELOCITY(FT*FT/SEC.) =   1.47
  LONGEST FLOWPATH FROM NODE  21010.00 TO NODE  21012.00 =  1721.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021012.0 TO NODE LR021013.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1440.00  DOWNSTREAM ELEVATION(FEET) = 1433.00
  STREET LENGTH(FEET) =   312.07   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00
```



```
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.88

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      16.01
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.42
    HALFSTREET FLOOD WIDTH(FEET) =   14.76
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.49
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.47
  STREET FLOW TRAVEL TIME(MIN.) =   1.49   Tc(MIN.) =  17.86
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.655
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.66      0.75      0.60    56
  SCHOOL                     B        1.95      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    2.61      SUBAREA RUNOFF(CFS) =    2.83
  EFFECTIVE AREA(ACRES) =     15.13    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     15.13        PEAK FLOW RATE(CFS) =      16.43

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.42   HALFSTREET FLOOD WIDTH(FEET) =  14.91
  FLOW VELOCITY(FEET/SEC.) =  3.51   DEPTH*VELOCITY(FT*FT/SEC.) =   1.49
  LONGEST FLOWPATH FROM NODE  21010.00 TO NODE  21013.00 =  2033.40 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021013.0 TO NODE LR021013.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  17.86
  RAINFALL INTENSITY(INCH/HR) =   1.66
  AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.60
  EFFECTIVE STREAM AREA(ACRES) =    15.13
  TOTAL STREAM AREA(ACRES) =    15.13
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.43

  ** CONFLUENCE DATA **
```

```
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
    1     32.17  18.24    1.634  0.75( 0.45) 0.60    30.2 LR021000.0
    2     16.43  17.86    1.655  0.75( 0.45) 0.60    15.1 LR021010.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
    1     48.48  17.86    1.655  0.75( 0.45) 0.60    44.6 LR021010.0
    2     48.32  18.24    1.634  0.75( 0.45) 0.60    45.3 LR021000.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     48.48    Tc(MIN.) =    17.86
  EFFECTIVE AREA(ACRES) =    44.65   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     45.28
  LONGEST FLOWPATH FROM NODE  21000.00 TO NODE  21013.00 =  2712.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021013.0 TO NODE LR021014.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1433.00  DOWNSTREAM(FEET) =   1380.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1311.64   CHANNEL SLOPE =  0.0404
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     48.48
  FLOW VELOCITY(FEET/SEC.) =   6.96   FLOW DEPTH(FEET) =   1.00
  TRAVEL TIME(MIN.) =   3.14   Tc(MIN.) =  21.00
  LONGEST FLOWPATH FROM NODE  21000.00 TO NODE  21014.00 =  4024.57 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021014.0 TO NODE LR021014.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.502
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       19.47      0.75      0.60    56
  COMMERCIAL                 B        2.09      0.75      0.10    56
  MOBILE HOME PARK           B        0.23      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.55
  SUBAREA AREA(ACRES) =   21.79      SUBAREA RUNOFF(CFS) =   21.41
  EFFECTIVE AREA(ACRES) =     66.44   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.58
  TOTAL AREA(ACRES) =     67.07       PEAK FLOW RATE(CFS) =      63.73

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
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  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

****************************************************************************
  FLOW PROCESS FROM NODE LR021014.0 TO NODE LR021015.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1380.00  DOWNSTREAM ELEVATION(FEET) = 1345.00
  STREET LENGTH(FEET) =  1339.49   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.84

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      70.36
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.62
    HALFSTREET FLOOD WIDTH(FEET) =   23.81
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.83
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.59
  STREET FLOW TRAVEL TIME(MIN.) =   3.83   Tc(MIN.) =  24.83
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.358
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.31      0.75      0.60    56
  MOBILE HOME PARK           B        9.23      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.36
  SUBAREA AREA(ACRES) =   13.54      SUBAREA RUNOFF(CFS) =   13.26
  EFFECTIVE AREA(ACRES) =     79.98    AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.55
  TOTAL AREA(ACRES) =     80.61       PEAK FLOW RATE(CFS) =      68.40

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.61   HALFSTREET FLOOD WIDTH(FEET) =  23.57
  FLOW VELOCITY(FEET/SEC.) =  5.78   DEPTH*VELOCITY(FT*FT/SEC.) =   3.53
  LONGEST FLOWPATH FROM NODE  21000.00 TO NODE  21015.00 =  5364.06 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021015.0 TO NODE LR021032.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
```

```
 UPSTREAM ELEVATION(FEET) = 1345.00  DOWNSTREAM ELEVATION(FEET) = 1332.00
 STREET LENGTH(FEET) =   945.30   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      72.30
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.68
   HALFSTREET FLOOD WIDTH(FEET) =   27.17
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.67
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.19
 STREET FLOW TRAVEL TIME(MIN.) =   3.38   Tc(MIN.) =  28.21
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.258
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.76      0.75      0.60    56
 SCHOOL                     B        3.85      0.75      0.60    56
 MOBILE HOME PARK           B        2.60      0.75      0.25    56
 PUBLIC PARK                B        0.44      0.75      0.85    56
 COMMERCIAL                 B        0.91      0.75      0.10    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.47
 SUBAREA AREA(ACRES) =    9.56      SUBAREA RUNOFF(CFS) =    7.81
 EFFECTIVE AREA(ACRES) =     89.54    AREA-AVERAGED Fm(INCH/HR) =  0.40
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.54
 TOTAL AREA(ACRES) =     90.17        PEAK FLOW RATE(CFS) =      69.01

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.67   HALFSTREET FLOOD WIDTH(FEET) =  26.68
 FLOW VELOCITY(FEET/SEC.) =  4.61   DEPTH*VELOCITY(FT*FT/SEC.) =   3.11
 LONGEST FLOWPATH FROM NODE  21000.00 TO NODE  21032.00 =  6309.36 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021032.0 TO NODE LR021032.0 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  28.21
 RAINFALL INTENSITY(INCH/HR) =   1.26
 AREA-AVERAGED Fm(INCH/HR) =  0.40
 AREA-AVERAGED Fp(INCH/HR) =  0.75
```



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 AREA-AVERAGED Ap =  0.54
 EFFECTIVE STREAM AREA(ACRES) =    89.54
 TOTAL STREAM AREA(ACRES) =    90.17
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     69.01

****************************************************************************
 FLOW PROCESS FROM NODE LR021020.0 TO NODE LR021021.0 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   732.03
 ELEVATION DATA: UPSTREAM(FEET) =   1442.00  DOWNSTREAM(FEET) =   1440.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.306
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.816
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.89      0.75      0.60    56   18.77
 MOBILE HOME PARK           B        4.31      0.75      0.25    56   15.31
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.36
 SUBAREA RUNOFF(CFS) =      8.64
 TOTAL AREA(ACRES) =      6.20   PEAK FLOW RATE(CFS) =      8.64

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

****************************************************************************
 FLOW PROCESS FROM NODE LR021021.0 TO NODE LR021022.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1440.00  DOWNSTREAM ELEVATION(FEET) = 1433.00
 STREET LENGTH(FEET) =   186.35   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.76

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      12.09
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.36
   HALFSTREET FLOOD WIDTH(FEET) =   11.87
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.96
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.44
 STREET FLOW TRAVEL TIME(MIN.) =   0.78   Tc(MIN.) =  16.09
```

```
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.762
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 MOBILE HOME PARK           B        4.18      0.75      0.25    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.81      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.31
 SUBAREA AREA(ACRES) =    4.99      SUBAREA RUNOFF(CFS) =    6.88
 EFFECTIVE AREA(ACRES) =     11.19    AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.33
 TOTAL AREA(ACRES) =     11.19        PEAK FLOW RATE(CFS) =      15.23

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.39   HALFSTREET FLOOD WIDTH(FEET) =  13.04
 FLOW VELOCITY(FEET/SEC.) =  4.19   DEPTH*VELOCITY(FT*FT/SEC.) =   1.62
 LONGEST FLOWPATH FROM NODE  21020.00 TO NODE  21022.00 =   918.38 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021022.0 TO NODE LR021023.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1433.00  DOWNSTREAM ELEVATION(FEET) = 1416.00
 STREET LENGTH(FEET) =   274.30   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.66

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      20.46
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.39
   HALFSTREET FLOOD WIDTH(FEET) =   13.27
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.44
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.13
 STREET FLOW TRAVEL TIME(MIN.) =   0.84   Tc(MIN.) =  16.93
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.709
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 MOBILE HOME PARK           B        6.51      0.75      0.25    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.37      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.31
```



```
 SUBAREA AREA(ACRES) =    7.88      SUBAREA RUNOFF(CFS) =   10.47
 EFFECTIVE AREA(ACRES) =     19.07    AREA-AVERAGED Fm(INCH/HR) =  0.24
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.32
 TOTAL AREA(ACRES) =     19.07        PEAK FLOW RATE(CFS) =      25.17

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.41   HALFSTREET FLOOD WIDTH(FEET) =  14.37
 FLOW VELOCITY(FEET/SEC.) =  5.77   DEPTH*VELOCITY(FT*FT/SEC.) =   2.38
 LONGEST FLOWPATH FROM NODE  21020.00 TO NODE  21023.00 =  1192.68 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021023.0 TO NODE LR021024.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1416.00  DOWNSTREAM ELEVATION(FEET) = 1402.00
 STREET LENGTH(FEET) =   250.39   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.68

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      29.65
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.44
   HALFSTREET FLOOD WIDTH(FEET) =   15.70
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.74
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.53
 STREET FLOW TRAVEL TIME(MIN.) =   0.73   Tc(MIN.) =  17.66
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.667
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 MOBILE HOME PARK           B        6.35      0.75      0.25    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.47      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.27
 SUBAREA AREA(ACRES) =    6.82      SUBAREA RUNOFF(CFS) =    8.97
 EFFECTIVE AREA(ACRES) =     25.89    AREA-AVERAGED Fm(INCH/HR) =  0.23
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.31
 TOTAL AREA(ACRES) =     25.89        PEAK FLOW RATE(CFS) =      33.41

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

 END OF SUBAREA STREET FLOW HYDRAULICS:
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  DEPTH(FEET) = 0.46   HALFSTREET FLOOD WIDTH(FEET) =  16.48
  FLOW VELOCITY(FEET/SEC.) =  5.90   DEPTH*VELOCITY(FT*FT/SEC.) =   2.69
  LONGEST FLOWPATH FROM NODE  21020.00 TO NODE  21024.00 =  1443.07 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021024.0 TO NODE LR021025.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1402.00  DOWNSTREAM ELEVATION(FEET) = 1390.00
  STREET LENGTH(FEET) =   390.63   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.80

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      37.61
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.51
    HALFSTREET FLOOD WIDTH(FEET) =   18.44
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.99
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.54
  STREET FLOW TRAVEL TIME(MIN.) =   1.30   Tc(MIN.) =  18.96
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.597
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.17      0.75      0.60    56
  MOBILE HOME PARK           B        3.23      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.45
  SUBAREA AREA(ACRES) =    7.40      SUBAREA RUNOFF(CFS) =    8.41
  EFFECTIVE AREA(ACRES) =     33.29    AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.34
  TOTAL AREA(ACRES) =     33.29        PEAK FLOW RATE(CFS) =      40.19

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.52   HALFSTREET FLOOD WIDTH(FEET) =  18.87
  FLOW VELOCITY(FEET/SEC.) =  5.12   DEPTH*VELOCITY(FT*FT/SEC.) =   2.65
  LONGEST FLOWPATH FROM NODE  21020.00 TO NODE  21025.00 =  1833.70 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021025.0 TO NODE LR021026.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
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  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1390.00  DOWNSTREAM ELEVATION(FEET) = 1385.00
  STREET LENGTH(FEET) =   357.04   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      42.10
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.58
    HALFSTREET FLOOD WIDTH(FEET) =   22.04
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.03
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.34
  STREET FLOW TRAVEL TIME(MIN.) =   1.48   Tc(MIN.) =  20.44
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.527
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.32      0.75      0.60    56
  COMMERCIAL                 B        1.20      0.75      0.10    56
  MOBILE HOME PARK           B        0.81      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.33
  SUBAREA AREA(ACRES) =    3.33      SUBAREA RUNOFF(CFS) =    3.82
  EFFECTIVE AREA(ACRES) =     36.62    AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.34
  TOTAL AREA(ACRES) =     36.62        PEAK FLOW RATE(CFS) =      41.91

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.58   HALFSTREET FLOOD WIDTH(FEET) =  22.04
  FLOW VELOCITY(FEET/SEC.) =  4.01   DEPTH*VELOCITY(FT*FT/SEC.) =   2.33
  LONGEST FLOWPATH FROM NODE  21020.00 TO NODE  21026.00 =  2190.74 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021026.0 TO NODE LR021027.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1385.00  DOWNSTREAM ELEVATION(FEET) = 1374.00
  STREET LENGTH(FEET) =   355.39   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
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  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.80

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      45.18
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.53
    HALFSTREET FLOOD WIDTH(FEET) =   19.60
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.37
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.86
  STREET FLOW TRAVEL TIME(MIN.) =   1.10   Tc(MIN.) =  21.54
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.479
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.67      0.75      0.60    56
  COMMERCIAL                 B        3.22      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.33
  SUBAREA AREA(ACRES) =    5.89      SUBAREA RUNOFF(CFS) =    6.55
  EFFECTIVE AREA(ACRES) =     42.51    AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.34
  TOTAL AREA(ACRES) =     42.51        PEAK FLOW RATE(CFS) =      46.89

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.54   HALFSTREET FLOOD WIDTH(FEET) =  19.91
  FLOW VELOCITY(FEET/SEC.) =  5.42   DEPTH*VELOCITY(FT*FT/SEC.) =   2.91
  LONGEST FLOWPATH FROM NODE  21020.00 TO NODE  21027.00 =  2546.13 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021027.0 TO NODE LR021028.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1374.00  DOWNSTREAM ELEVATION(FEET) = 1368.00
  STREET LENGTH(FEET) =   309.73   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90
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    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      49.61
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.58
    HALFSTREET FLOOD WIDTH(FEET) =   22.10
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.72
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.75
  STREET FLOW TRAVEL TIME(MIN.) =   1.09   Tc(MIN.) =  22.63
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.436
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.72      0.75      0.60    56
  COMMERCIAL                 B        2.05      0.75      0.10    56
  MOBILE HOME PARK           B        0.45      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.37
  SUBAREA AREA(ACRES) =    5.22      SUBAREA RUNOFF(CFS) =    5.43
  EFFECTIVE AREA(ACRES) =     47.73    AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.34
  TOTAL AREA(ACRES) =     47.73        PEAK FLOW RATE(CFS) =      50.67

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.59   HALFSTREET FLOOD WIDTH(FEET) =  22.29
  FLOW VELOCITY(FEET/SEC.) =  4.75   DEPTH*VELOCITY(FT*FT/SEC.) =   2.78
  LONGEST FLOWPATH FROM NODE  21020.00 TO NODE  21028.00 =  2855.86 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021028.0 TO NODE LR021029.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1368.00  DOWNSTREAM ELEVATION(FEET) = 1363.00
  STREET LENGTH(FEET) =   301.04   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      53.32
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.61
    HALFSTREET FLOOD WIDTH(FEET) =   23.32
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.59
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  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.78
 STREET FLOW TRAVEL TIME(MIN.) =   1.09   Tc(MIN.) =  23.73
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.396
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        2.13      0.75      0.60    56
 COMMERCIAL                 B        2.11      0.75      0.10    56
 MOBILE HOME PARK           B        0.89      0.75      0.25    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.33
 SUBAREA AREA(ACRES) =    5.13      SUBAREA RUNOFF(CFS) =    5.29
 EFFECTIVE AREA(ACRES) =     52.86    AREA-AVERAGED Fm(INCH/HR) =  0.26
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.34
 TOTAL AREA(ACRES) =     52.86        PEAK FLOW RATE(CFS) =      54.24

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.61   HALFSTREET FLOOD WIDTH(FEET) =  23.51
 FLOW VELOCITY(FEET/SEC.) =  4.60   DEPTH*VELOCITY(FT*FT/SEC.) =   2.81
 LONGEST FLOWPATH FROM NODE  21020.00 TO NODE  21029.00 =  3156.90 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021029.0 TO NODE LR021030.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1363.00  DOWNSTREAM ELEVATION(FEET) = 1350.00
 STREET LENGTH(FEET) =   360.35   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.76

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      72.54
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.59
   HALFSTREET FLOOD WIDTH(FEET) =   22.65
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.60
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.91
 STREET FLOW TRAVEL TIME(MIN.) =   0.91   Tc(MIN.) =  24.64
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.365
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 B        9.68      0.75      0.10    56
```



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 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       27.42      0.75      0.60    56
 MOBILE HOME PARK           B        2.60      0.75      0.25    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.46
 SUBAREA AREA(ACRES) =   39.70      SUBAREA RUNOFF(CFS) =   36.60
 EFFECTIVE AREA(ACRES) =     92.56    AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.39
 TOTAL AREA(ACRES) =     92.56        PEAK FLOW RATE(CFS) =      89.35

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.63   HALFSTREET FLOOD WIDTH(FEET) =  24.48
 FLOW VELOCITY(FEET/SEC.) =  7.02   DEPTH*VELOCITY(FT*FT/SEC.) =   4.42
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  360.4 FT WITH ELEVATION-DROP =  13.0 FT, IS   99.1 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21030.00
 LONGEST FLOWPATH FROM NODE  21020.00 TO NODE  21030.00 =  3517.25 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021030.0 TO NODE LR021031.0 IS CODE =  48
----------------------------------------------------------------------------
 >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1350.00  DOWNSTREAM(FEET) =  1340.00
 FLOW LENGTH(FEET) =   474.31   MANNING'S N =  0.014
 GIVEN BOX BASEWIDTH(FEET) =   6.00   GIVEN BOX HEIGHT(FEET) =   2.50
 FLOWDEPTH IN BOX IS  1.11 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  13.40
 BOX-FLOW(CFS) =     89.35
 BOX-FLOW TRAVEL TIME(MIN.) =   0.59    Tc(MIN.) =  25.23
 LONGEST FLOWPATH FROM NODE  21020.00 TO NODE  21031.00 =  3991.56 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021031.0 TO NODE LR021031.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  25.23
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.345
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        2.14      0.75      0.60    56
 COMMERCIAL                 B        3.35      0.75      0.10    56
 SCHOOL                     B        0.63      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.33
 SUBAREA AREA(ACRES) =    6.12      SUBAREA RUNOFF(CFS) =    6.07
 EFFECTIVE AREA(ACRES) =     98.68   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.39
 TOTAL AREA(ACRES) =     98.68        PEAK FLOW RATE(CFS) =      93.82

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44
```

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****************************************************************************
  FLOW PROCESS FROM NODE LR021031.0 TO NODE LR021032.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1340.00  DOWNSTREAM(FEET) =  1332.00
  FLOW LENGTH(FEET) =   772.50   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   6.00   GIVEN BOX HEIGHT(FEET) =   2.50
  FLOWDEPTH IN BOX IS  1.46 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  10.70
  BOX-FLOW(CFS) =     93.82
  BOX-FLOW TRAVEL TIME(MIN.) =   1.20    Tc(MIN.) =  26.43
  LONGEST FLOWPATH FROM NODE  21020.00 TO NODE  21032.00 =  4764.06 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021032.0 TO NODE LR021032.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  26.43
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.308
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.65      0.75      0.60    56
  SCHOOL                     B        1.27      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    1.92      SUBAREA RUNOFF(CFS) =    1.49
  EFFECTIVE AREA(ACRES) =    100.60   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.39
  TOTAL AREA(ACRES) =    100.60       PEAK FLOW RATE(CFS) =      93.82
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

****************************************************************************
  FLOW PROCESS FROM NODE LR021032.0 TO NODE LR021032.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  26.43
  RAINFALL INTENSITY(INCH/HR) =   1.31
  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.39
  EFFECTIVE STREAM AREA(ACRES) =   100.60
  TOTAL STREAM AREA(ACRES) =   100.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     93.82

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
```



```
    NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
       1     69.01  28.21    1.258  0.75( 0.40) 0.54    89.5 LR021010.0
       1     68.61  28.61    1.248  0.75( 0.40) 0.54    90.2 LR021000.0
       2     93.82  26.43    1.308  0.75( 0.29) 0.39   100.6 LR021020.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    162.26  26.43    1.308  0.75( 0.34) 0.46   184.5 LR021020.0
      2    158.20  28.21    1.258  0.75( 0.34) 0.46   190.1 LR021010.0
      3    156.83  28.61    1.248  0.75( 0.34) 0.46   190.8 LR021000.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    162.26    Tc(MIN.) =    26.43
  EFFECTIVE AREA(ACRES) =   184.50   AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.46
  TOTAL AREA(ACRES) =    190.77
  LONGEST FLOWPATH FROM NODE  21000.00 TO NODE  21032.00 =  6309.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021032.0 TO NODE LR021043.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1332.00  DOWNSTREAM(FEET) =  1327.00
  FLOW LENGTH(FEET) =   353.61   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  11.00   GIVEN BOX HEIGHT(FEET) =   2.50
  FLOWDEPTH IN BOX IS  1.19 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  12.42
  BOX-FLOW(CFS) =    162.26
  BOX-FLOW TRAVEL TIME(MIN.) =   0.47    Tc(MIN.) =  26.90
  LONGEST FLOWPATH FROM NODE  21000.00 TO NODE  21043.00 =  6662.97 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021043.0 TO NODE LR021043.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  26.90
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.294
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.84      0.75      0.60    56
  SCHOOL                     B        2.77      0.75      0.60    56
  COMMERCIAL                 B        2.00      0.75      0.10    56
  MOBILE HOME PARK           B        6.89      0.75      0.25    56
  PUBLIC PARK                B        1.56      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.41
  SUBAREA AREA(ACRES) =   16.06      SUBAREA RUNOFF(CFS) =   14.26
  EFFECTIVE AREA(ACRES) =    200.56   AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.45
  TOTAL AREA(ACRES) =    206.83       PEAK FLOW RATE(CFS) =     172.40
```

```
 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    172.53  26.88    1.295  0.75( 0.34) 0.45   200.6 LR021020.0
     2    168.10  28.64    1.247  0.75( 0.34) 0.46   206.2 LR021010.0
     3    166.73  29.02    1.237  0.75( 0.34) 0.46   206.8 LR021000.0
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    172.53  Tc(MIN.) =  26.88
 AREA-AVERAGED Fm(INCH/HR) =  0.34  AREA-AVERAGED Fp(INCH/HR) =  0.75
 AREA-AVERAGED Ap =  0.45  EFFECTIVE AREA(ACRES) =    200.56

****************************************************************************
 FLOW PROCESS FROM NODE LR021043.0 TO NODE LR021043.0 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  26.88
 RAINFALL INTENSITY(INCH/HR) =   1.30
 AREA-AVERAGED Fm(INCH/HR) =  0.34
 AREA-AVERAGED Fp(INCH/HR) =  0.75
 AREA-AVERAGED Ap =  0.45
 EFFECTIVE STREAM AREA(ACRES) =   200.56
 TOTAL STREAM AREA(ACRES) =   206.83
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    172.53

****************************************************************************
 FLOW PROCESS FROM NODE LR021040.0 TO NODE LR021041.0 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   905.71
 ELEVATION DATA: UPSTREAM(FEET) =   1358.00  DOWNSTREAM(FEET) =   1350.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.925
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.109
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                 B        7.08      0.75      0.10    56   11.92
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        4.20      0.75      0.60    56   16.16
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.29
 SUBAREA RUNOFF(CFS) =     19.24
 TOTAL AREA(ACRES) =     11.28   PEAK FLOW RATE(CFS) =     19.24

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

****************************************************************************
```



```
 FLOW PROCESS FROM NODE LR021041.0 TO NODE LR021042.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1350.00  DOWNSTREAM ELEVATION(FEET) = 1341.00
 STREET LENGTH(FEET) =   642.50   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      26.88
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.52
  HALFSTREET FLOOD WIDTH(FEET) =   18.81
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.44
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.78
 STREET FLOW TRAVEL TIME(MIN.) =   3.11   Tc(MIN.) =  15.03
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.835
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        4.00      0.75      0.60    56
 COMMERCIAL                 B        5.39      0.75      0.10    56
 SCHOOL                     B        1.37      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.35
 SUBAREA AREA(ACRES) =   10.76      SUBAREA RUNOFF(CFS) =   15.24
 EFFECTIVE AREA(ACRES) =     22.04    AREA-AVERAGED Fm(INCH/HR) =  0.24
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.32
 TOTAL AREA(ACRES) =     22.04        PEAK FLOW RATE(CFS) =      31.70

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.54   HALFSTREET FLOOD WIDTH(FEET) =  19.91
 FLOW VELOCITY(FEET/SEC.) =  3.66   DEPTH*VELOCITY(FT*FT/SEC.) =   1.97
 LONGEST FLOWPATH FROM NODE  21040.00 TO NODE  21042.00 =  1548.21 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021042.0 TO NODE LR021043.0 IS CODE =  48
----------------------------------------------------------------------------
 >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1341.00  DOWNSTREAM(FEET) =  1327.00
 FLOW LENGTH(FEET) =   896.68   MANNING'S N =  0.014
```

```
  GIVEN BOX BASEWIDTH(FEET) =   5.00   GIVEN BOX HEIGHT(FEET) =   3.00
  FLOWDEPTH IN BOX IS  0.71 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =   8.90
  BOX-FLOW(CFS) =     31.70
  BOX-FLOW TRAVEL TIME(MIN.) =   1.68    Tc(MIN.) =  16.71
  LONGEST FLOWPATH FROM NODE  21040.00 TO NODE  21043.00 =  2444.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021043.0 TO NODE LR021043.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  16.71
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.722
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.11      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.51      0.75      0.60    56
  SCHOOL                     B        2.94      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.59
  SUBAREA AREA(ACRES) =    5.56      SUBAREA RUNOFF(CFS) =    6.41
  EFFECTIVE AREA(ACRES) =     27.60   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.37
  TOTAL AREA(ACRES) =     27.60       PEAK FLOW RATE(CFS) =      35.87

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

****************************************************************************
  FLOW PROCESS FROM NODE LR021043.0 TO NODE LR021043.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  16.71
  RAINFALL INTENSITY(INCH/HR) =   1.72
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.37
  EFFECTIVE STREAM AREA(ACRES) =    27.60
  TOTAL STREAM AREA(ACRES) =    27.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     35.87

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    172.53  26.88    1.295  0.75( 0.34) 0.45   200.6 LR021020.0
      1    168.10  28.64    1.247  0.75( 0.34) 0.46   206.2 LR021010.0
      1    166.73  29.02    1.237  0.75( 0.34) 0.46   206.8 LR021000.0
      2     35.87  16.71    1.722  0.75( 0.28) 0.37    27.6 LR021040.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.
```



```
  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    191.10  16.71    1.722  0.75( 0.33) 0.44   152.3 LR021040.0
      2    197.78  26.88    1.295  0.75( 0.33) 0.44   228.2 LR021020.0
      3    192.16  28.64    1.247  0.75( 0.33) 0.45   233.8 LR021010.0
      4    190.55  29.02    1.237  0.75( 0.33) 0.45   234.4 LR021000.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    197.78    Tc(MIN.) =    26.88
  EFFECTIVE AREA(ACRES) =   228.16   AREA-AVERAGED Fm(INCH/HR) =  0.33
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.44
  TOTAL AREA(ACRES) =    234.43
  LONGEST FLOWPATH FROM NODE  21000.00 TO NODE  21043.00 =  6662.97 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021043.0 TO NODE LR021044.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1327.00  DOWNSTREAM(FEET) =  1318.00
  FLOW LENGTH(FEET) =   665.51   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  12.00   GIVEN BOX HEIGHT(FEET) =   2.50
  FLOWDEPTH IN BOX IS  1.28 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  12.83
  BOX-FLOW(CFS) =    197.78
  BOX-FLOW TRAVEL TIME(MIN.) =   0.86    Tc(MIN.) =  27.74
  LONGEST FLOWPATH FROM NODE  21000.00 TO NODE  21044.00 =  7328.48 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021044.0 TO NODE LR021044.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  27.74
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.271
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.70      0.75      0.60    56
  COMMERCIAL                 B       13.39      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.23
  SUBAREA AREA(ACRES) =   18.09      SUBAREA RUNOFF(CFS) =   17.89
  EFFECTIVE AREA(ACRES) =    246.25   AREA-AVERAGED Fm(INCH/HR) =  0.32
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.43
  TOTAL AREA(ACRES) =    252.52       PEAK FLOW RATE(CFS) =     210.67

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    208.76  17.54    1.673  0.75( 0.31) 0.42   170.4 LR021040.0
      2    211.20  27.66    1.273  0.75( 0.32) 0.43   246.2 LR021020.0
      3    205.32  29.38    1.228  0.75( 0.32) 0.43   251.9 LR021010.0
```

```
      4    203.83  29.73    1.219  0.75( 0.32) 0.43   252.5 LR021000.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    211.20  Tc(MIN.) =  27.66
  AREA-AVERAGED Fm(INCH/HR) =  0.32  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.43  EFFECTIVE AREA(ACRES) =    246.25

****************************************************************************
  FLOW PROCESS FROM NODE LR021044.0 TO NODE LR021044.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020968.0 TO NODE LR020968.0 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20968.dna
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     3254.97    Tc(MIN.) =  59.44
  AREA-AVERAGED Fm(INCH/HR) =  0.52    Ybar = 0.60
  TOTAL AREA(ACRES) =   10106.93
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20968.00 = 37082.74 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020968.0 TO NODE LR020968.0 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     3254.97    Tc(MIN.) =  59.44
  AREA-AVERAGED Fm(INCH/HR) =  0.52    Ybar = 0.60
  TOTAL AREA(ACRES) =   10106.93
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20968.00 = 37082.74 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR020968.0 TO NODE LR020968.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR020968.0 TO NODE LR021044.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1335.00  DOWNSTREAM(FEET) =  1318.00
  FLOW LENGTH(FEET) =  1136.29   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  23.00   GIVEN BOX HEIGHT(FEET) =  10.00
  FLOWDEPTH IN BOX IS  4.82 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  29.33
  BOX-FLOW(CFS) =   3254.97
  BOX-FLOW TRAVEL TIME(MIN.) =   0.65    Tc(MIN.) =  60.08
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21044.00 = 38219.03 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021044.0 TO NODE LR021044.0 IS CODE =  11
```



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----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     3254.97    Tc(MIN.) =  60.08
  AREA-AVERAGED Fm(INCH/HR) =  0.52    Ybar = 0.60
  TOTAL AREA(ACRES) =   10106.93
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21044.00 = 38219.03 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q      Tc   Intensity   Fp(Fm)      Ap   Ae      HEADWATER
   NUMBER   (CFS)  (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    208.76  17.54    1.673  0.75( 0.31) 0.42   170.4 LR021040.0
      2    211.20  27.66    1.273  0.75( 0.32) 0.43   246.2 LR021020.0
      3    205.32  29.38    1.228  0.75( 0.32) 0.43   251.9 LR021010.0
      4    203.83  29.73    1.219  0.75( 0.32) 0.43   252.5 LR021000.0
  LONGEST FLOWPATH FROM NODE  21000.00 TO NODE  21044.00 =  7328.48 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.81;3H= 1.42;6H= 2.04;24H= 4.19
  S-GRAPH: VALLEY(DEV.)= 69.9%;VALLEY(UNDEV.)/DESERT= 30.1%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 1.00; LAG(HR) = 0.80; Fm(INCH/HR) = 0.51; Ybar = 0.60
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.67; 30M = 0.67; 1HR = 0.67;
  3HR = 0.94; 6HR = 0.97; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  10359.45
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21044.00 = 38219.03 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0335; Lca/L=0.4,n=.0301; Lca/L=0.5,n=.0276;Lca/L=0.6,n=.0258
  TIME OF PEAK FLOW(HR) = 16.83  RUNOFF VOLUME(AF) =    1484.92
  PEAK FLOW RATE(CFS) =    3318.04

****************************************************************************
  FLOW PROCESS FROM NODE LR021044.0 TO NODE LR021044.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021044.0 TO NODE LR021045.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1318.00  DOWNSTREAM(FEET) =   1295.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1385.05   CHANNEL SLOPE =  0.0166
  CHANNEL BASE(FEET) =   15.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   7.50
  CHANNEL FLOW THRU SUBAREA(CFS) =   3318.04
  FLOW VELOCITY(FEET/SEC.) =  28.01   FLOW DEPTH(FEET) =   4.81
  TRAVEL TIME(MIN.) =   0.82   Tc(MIN.) =  60.91
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21045.00 = 39604.08 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021045.0 TO NODE LR021045.0 IS CODE =  81
```

```
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
  MAINLINE Tc(MIN) =  60.91
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.793
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A       25.15      0.98      0.50    32
  COMMERCIAL                 A       34.08      0.98      0.10    32
  SCHOOL                     A        9.02      0.98      0.60    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        6.36      0.98      0.60    32
  COMMERCIAL                 B       60.62      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       23.64      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.87
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.29
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =  158.87
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.81;3H= 1.42;6H= 2.04;24H= 4.18
  S-GRAPH: VALLEY(DEV.)= 70.3%;VALLEY(UNDEV.)/DESERT= 29.7%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 1.02; LAG(HR) = 0.81; Fm(INCH/HR) = 0.51; Ybar = 0.60
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.66; 30M = 0.67; 1HR = 0.67;
  3HR = 0.94; 6HR = 0.97; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  10518.32
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21045.00 = 39604.08 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0329; Lca/L=0.4,n=.0295; Lca/L=0.5,n=.0271;Lca/L=0.6,n=.0253
  TIME OF PEAK FLOW(HR) = 16.83  RUNOFF VOLUME(AF) =    1516.45
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   3337.83
  TOTAL AREA(ACRES) =  10518.32       PEAK FLOW RATE(CFS) =    3337.83

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

******************************************************************************
  FLOW PROCESS FROM NODE LR021045.0 TO NODE LR021046.0 IS CODE =  54
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1295.00  DOWNSTREAM(FEET) =   1250.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2744.77   CHANNEL SLOPE =  0.0164
  CHANNEL BASE(FEET) =   15.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   7.50
  CHANNEL FLOW THRU SUBAREA(CFS) =   3337.83
  FLOW VELOCITY(FEET/SEC.) =  27.88   FLOW DEPTH(FEET) =   4.85
  TRAVEL TIME(MIN.) =   1.64   Tc(MIN.) =  62.55
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21046.00 = 42348.85 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE LR021046.0 TO NODE LR021046.0 IS CODE =  81
```



```
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
  MAINLINE Tc(MIN) =  62.55
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.780
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 A       22.52      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        7.83      0.98      0.60    32
  COMMERCIAL                 B       38.49      0.75      0.10    56
  PUBLIC PARK                A        8.61      0.98      0.85    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.45      0.75      0.60    56
  MOBILE HOME PARK           B        0.52      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.90
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.25
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =   82.42
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.81;3H= 1.42;6H= 2.04;24H= 4.17
  S-GRAPH: VALLEY(DEV.)= 70.6%;VALLEY(UNDEV.)/DESERT= 29.4%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 1.04; LAG(HR) = 0.83; Fm(INCH/HR) = 0.51; Ybar = 0.59
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.66; 30M = 0.67; 1HR = 0.67;
  3HR = 0.94; 6HR = 0.97; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  10600.74
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21046.00 = 42348.85 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0319; Lca/L=0.4,n=.0286; Lca/L=0.5,n=.0263;Lca/L=0.6,n=.0245
  TIME OF PEAK FLOW(HR) = 16.83  RUNOFF VOLUME(AF) =    1533.43
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   3275.06
  TOTAL AREA(ACRES) =  10600.74       PEAK FLOW RATE(CFS) =    3337.83
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

******************************************************************************
  FLOW PROCESS FROM NODE LR021046.0 TO NODE LR021069.0 IS CODE =  54
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1250.00  DOWNSTREAM(FEET) =   1215.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2718.03   CHANNEL SLOPE =  0.0129
  CHANNEL BASE(FEET) =   18.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   9.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   3337.83
  FLOW VELOCITY(FEET/SEC.) =  25.18   FLOW DEPTH(FEET) =   4.80
  TRAVEL TIME(MIN.) =   1.80   Tc(MIN.) =  64.35
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21069.00 = 45066.88 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE LR021069.0 TO NODE LR021069.0 IS CODE =  81
```

```
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN) =  64.35
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.767
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.29      0.75      0.60    56
  COMMERCIAL                 B       24.38      0.75      0.10    56
  COMMERCIAL                 A        9.45      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.36      0.98      0.60    32
  PUBLIC PARK                A        5.30      0.98      0.85    32
  PUBLIC PARK                B        0.69      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.86
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.27
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =   46.47
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.81;3H= 1.42;6H= 2.04;24H= 4.17
  S-GRAPH: VALLEY(DEV.)= 70.7%;VALLEY(UNDEV.)/DESERT= 29.3%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 1.07; LAG(HR) = 0.86; Fm(INCH/HR) = 0.51; Ybar = 0.59
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.66; 30M = 0.67; 1HR = 0.67;
  3HR = 0.94; 6HR = 0.97; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  10647.21
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21069.00 = 45066.88 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0310; Lca/L=0.4,n=.0278; Lca/L=0.5,n=.0255;Lca/L=0.6,n=.0238
  TIME OF PEAK FLOW(HR) = 16.92  RUNOFF VOLUME(AF) =    1542.90
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   3306.20
  TOTAL AREA(ACRES) =  10647.21       PEAK FLOW RATE(CFS) =    3337.83
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

********************************************************************************
  FLOW PROCESS FROM NODE LR021069.0 TO NODE LR021069.0 IS CODE =  10
--------------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
================================================================================

********************************************************************************
  FLOW PROCESS FROM NODE LR021050.0 TO NODE LR021050.5 IS CODE =  21
--------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
================================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   520.56
  ELEVATION DATA: UPSTREAM(FEET) =   1255.00  DOWNSTREAM(FEET) =   1250.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.396
```



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  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.433
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        2.98      0.98      0.50    32   12.02
  COMMERCIAL                 A        5.49      0.98      0.10    32    9.40
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.85      0.98      0.60    32   12.73
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.27
  SUBAREA RUNOFF(CFS) =     18.17
  TOTAL AREA(ACRES) =      9.32   PEAK FLOW RATE(CFS) =     18.17

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

********************************************************************************
  FLOW PROCESS FROM NODE LR021050.5 TO NODE LR021051.0 IS CODE =  63
--------------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) = 1250.00  DOWNSTREAM ELEVATION(FEET) = 1246.00
  STREET LENGTH(FEET) =   343.10   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      26.28
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.52
    HALFSTREET FLOOD WIDTH(FEET) =   19.24
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.23
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.70
  STREET FLOW TRAVEL TIME(MIN.) =   1.77   Tc(MIN.) =  11.17
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.194
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        2.98      0.98      0.50    32
  COMMERCIAL                 A        5.50      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.85      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.27
  SUBAREA AREA(ACRES) =    9.33      SUBAREA RUNOFF(CFS) =   16.19
  EFFECTIVE AREA(ACRES) =     18.65    AREA-AVERAGED Fm(INCH/HR) =  0.27
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  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.27
  TOTAL AREA(ACRES) =     18.65        PEAK FLOW RATE(CFS) =      32.35

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.55   HALFSTREET FLOOD WIDTH(FEET) =  20.70
  FLOW VELOCITY(FEET/SEC.) =  3.48   DEPTH*VELOCITY(FT*FT/SEC.) =   1.93
  LONGEST FLOWPATH FROM NODE  21050.00 TO NODE  21051.00 =   863.66 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021051.0 TO NODE LR021052.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1246.00  DOWNSTREAM ELEVATION(FEET) = 1236.00
  STREET LENGTH(FEET) =   756.64   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      48.49
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.61
    HALFSTREET FLOOD WIDTH(FEET) =   23.51
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.12
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.51
  STREET FLOW TRAVEL TIME(MIN.) =   3.06   Tc(MIN.) =  14.23
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.897
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        1.87      0.98      0.50    32
  COMMERCIAL                 A       17.40      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.43      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.17
  SUBAREA AREA(ACRES) =   20.70      SUBAREA RUNOFF(CFS) =   32.24
  EFFECTIVE AREA(ACRES) =     39.35    AREA-AVERAGED Fm(INCH/HR) =  0.21
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.22
  TOTAL AREA(ACRES) =     39.35        PEAK FLOW RATE(CFS) =      59.61

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44
```



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  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.65   HALFSTREET FLOOD WIDTH(FEET) =  25.46
  FLOW VELOCITY(FEET/SEC.) =  4.35   DEPTH*VELOCITY(FT*FT/SEC.) =   2.83
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  756.6 FT WITH ELEVATION-DROP =  10.0 FT, IS   40.0 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21052.00
  LONGEST FLOWPATH FROM NODE  21050.00 TO NODE  21052.00 =  1620.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021052.0 TO NODE LR021067.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1236.00  DOWNSTREAM ELEVATION(FEET) = 1220.00
  STREET LENGTH(FEET) =  1432.84   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      85.75
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.74
    HALFSTREET FLOOD WIDTH(FEET) =   30.22
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.51
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.36
  STREET FLOW TRAVEL TIME(MIN.) =   5.29   Tc(MIN.) =  19.52
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.569
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A       17.32      0.98      0.50    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.30      0.75      0.60    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        5.92      0.75      0.50    56
  COMMERCIAL                 B        6.47      0.75      0.10    56
  COMMERCIAL                 A       13.55      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.00      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.91
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.33
  SUBAREA AREA(ACRES) =   45.56      SUBAREA RUNOFF(CFS) =   52.08
  EFFECTIVE AREA(ACRES) =     84.91    AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.93  AREA-AVERAGED Ap =  0.28
  TOTAL AREA(ACRES) =     84.91        PEAK FLOW RATE(CFS) =     100.07

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
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  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.78   HALFSTREET FLOOD WIDTH(FEET) =  32.11
  FLOW VELOCITY(FEET/SEC.) =  4.69   DEPTH*VELOCITY(FT*FT/SEC.) =   3.67
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1432.8 FT WITH ELEVATION-DROP =  16.0 FT, IS   67.4 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21067.00
  LONGEST FLOWPATH FROM NODE  21050.00 TO NODE  21067.00 =  3053.14 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021067.0 TO NODE LR021067.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  19.52
  RAINFALL INTENSITY(INCH/HR) =   1.57
  AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.93
  AREA-AVERAGED Ap =  0.28
  EFFECTIVE STREAM AREA(ACRES) =    84.91
  TOTAL STREAM AREA(ACRES) =    84.91
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    100.07

****************************************************************************
  FLOW PROCESS FROM NODE LR021060.0 TO NODE LR021061.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1000.00
  ELEVATION DATA: UPSTREAM(FEET) =   1268.00  DOWNSTREAM(FEET) =   1267.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   19.181
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.586
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        1.55      0.98      0.50    32   24.54
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.16      0.98      0.60    32   26.00
  COMMERCIAL                 A        6.97      0.98      0.10    32   19.18
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.22
  SUBAREA RUNOFF(CFS) =     11.91
  TOTAL AREA(ACRES) =      9.68   PEAK FLOW RATE(CFS) =     11.91

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

****************************************************************************
  FLOW PROCESS FROM NODE LR021061.0 TO NODE LR021062.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
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  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1267.00  DOWNSTREAM ELEVATION(FEET) = 1266.00
  STREET LENGTH(FEET) =   371.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      17.61
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.62
    HALFSTREET FLOOD WIDTH(FEET) =   22.92
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.62
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.00
  STREET FLOW TRAVEL TIME(MIN.) =   3.82   Tc(MIN.) =  23.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.422
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        1.79      0.98      0.50    32
  COMMERCIAL                 A        7.48      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.27      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.23
  SUBAREA AREA(ACRES) =   10.54      SUBAREA RUNOFF(CFS) =   11.38
  EFFECTIVE AREA(ACRES) =     20.22    AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.23
  TOTAL AREA(ACRES) =     20.22        PEAK FLOW RATE(CFS) =      21.86

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.66   HALFSTREET FLOOD WIDTH(FEET) =  24.97
  FLOW VELOCITY(FEET/SEC.) =  1.70   DEPTH*VELOCITY(FT*FT/SEC.) =   1.12
  LONGEST FLOWPATH FROM NODE  21060.00 TO NODE  21062.00 =  1371.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021062.0 TO NODE LR021063.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1266.00  DOWNSTREAM ELEVATION(FEET) = 1265.00
  STREET LENGTH(FEET) =   228.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
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  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      25.46
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.64
    HALFSTREET FLOOD WIDTH(FEET) =   24.10
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.12
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.36
  STREET FLOW TRAVEL TIME(MIN.) =   1.79   Tc(MIN.) =  24.80
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.359
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        1.53      0.98      0.50    32
  COMMERCIAL                 A        4.98      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.48      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.22
  SUBAREA AREA(ACRES) =    6.99      SUBAREA RUNOFF(CFS) =    7.19
  EFFECTIVE AREA(ACRES) =     27.21    AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.23
  TOTAL AREA(ACRES) =     27.21        PEAK FLOW RATE(CFS) =      27.91

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.66   HALFSTREET FLOOD WIDTH(FEET) =  24.97
  FLOW VELOCITY(FEET/SEC.) =  2.17   DEPTH*VELOCITY(FT*FT/SEC.) =   1.43
  LONGEST FLOWPATH FROM NODE  21060.00 TO NODE  21063.00 =  1599.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021063.0 TO NODE LR021064.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1265.00  DOWNSTREAM ELEVATION(FEET) = 1258.00
  STREET LENGTH(FEET) =   323.58   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
```



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  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.91

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      32.66
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.55
    HALFSTREET FLOOD WIDTH(FEET) =   19.41
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.13
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.26
  STREET FLOW TRAVEL TIME(MIN.) =   1.31   Tc(MIN.) =  26.11
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.318
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       A        4.16      0.98      0.50    32
  COMMERCIAL                 A        5.34      0.98      0.10    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.77      0.98      0.60    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.30
  SUBAREA AREA(ACRES) =   10.27      SUBAREA RUNOFF(CFS) =    9.48
  EFFECTIVE AREA(ACRES) =     37.48    AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.25
  TOTAL AREA(ACRES) =     37.48        PEAK FLOW RATE(CFS) =      36.39

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.56   HALFSTREET FLOOD WIDTH(FEET) =  20.29
  FLOW VELOCITY(FEET/SEC.) =  4.23   DEPTH*VELOCITY(FT*FT/SEC.) =   2.38
  LONGEST FLOWPATH FROM NODE  21060.00 TO NODE  21064.00 =  1923.08 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021064.0 TO NODE LR021065.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1258.00  DOWNSTREAM ELEVATION(FEET) = 1254.00
  STREET LENGTH(FEET) =   294.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.03

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      40.44
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.62
    HALFSTREET FLOOD WIDTH(FEET) =   23.16
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.64
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  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.26
 STREET FLOW TRAVEL TIME(MIN.) =   1.35   Tc(MIN.) =  27.45
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.279
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       A        4.73      0.98      0.50    32
 COMMERCIAL                 A        3.54      0.98      0.10    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        1.55      0.98      0.60    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.37
 SUBAREA AREA(ACRES) =    9.82      SUBAREA RUNOFF(CFS) =    8.10
 EFFECTIVE AREA(ACRES) =     47.30    AREA-AVERAGED Fm(INCH/HR) =  0.26
 AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.27
 TOTAL AREA(ACRES) =     47.30        PEAK FLOW RATE(CFS) =      43.17

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.63   HALFSTREET FLOOD WIDTH(FEET) =  23.74
 FLOW VELOCITY(FEET/SEC.) =  3.70   DEPTH*VELOCITY(FT*FT/SEC.) =   2.35
 LONGEST FLOWPATH FROM NODE  21060.00 TO NODE  21065.00 =  2217.58 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021065.0 TO NODE LR021066.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1254.00  DOWNSTREAM ELEVATION(FEET) = 1230.00
 STREET LENGTH(FEET) =  1452.00   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.97

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      46.36
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.63
   HALFSTREET FLOOD WIDTH(FEET) =   23.51
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.06
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.55
 STREET FLOW TRAVEL TIME(MIN.) =   5.97   Tc(MIN.) =  33.42
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.137
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
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 "3-4 DWELLINGS/ACRE"       A        2.04      0.98      0.60    32
 COMMERCIAL                 A        5.75      0.98      0.10    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.23
 SUBAREA AREA(ACRES) =    7.79      SUBAREA RUNOFF(CFS) =    6.39
 EFFECTIVE AREA(ACRES) =     55.09    AREA-AVERAGED Fm(INCH/HR) =  0.26
 AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.27
 TOTAL AREA(ACRES) =     55.09        PEAK FLOW RATE(CFS) =      43.50

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.62   HALFSTREET FLOOD WIDTH(FEET) =  22.92
 FLOW VELOCITY(FEET/SEC.) =  3.99   DEPTH*VELOCITY(FT*FT/SEC.) =   2.46
 LONGEST FLOWPATH FROM NODE  21060.00 TO NODE  21066.00 =  3669.58 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021066.0 TO NODE LR021067.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1230.00  DOWNSTREAM ELEVATION(FEET) = 1220.00
 STREET LENGTH(FEET) =   858.50   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      44.60
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.65
   HALFSTREET FLOOD WIDTH(FEET) =   24.80
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.52
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.30
 STREET FLOW TRAVEL TIME(MIN.) =   4.07   Tc(MIN.) =  37.49
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.061
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 B        1.85      0.75      0.10    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.05      0.75      0.60    56
 COMMERCIAL                 A        0.62      0.98      0.10    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.80
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.11
 SUBAREA AREA(ACRES) =    2.52      SUBAREA RUNOFF(CFS) =    2.21
 EFFECTIVE AREA(ACRES) =     57.61    AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.26
 TOTAL AREA(ACRES) =     57.61        PEAK FLOW RATE(CFS) =      43.50
```

```
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.65   HALFSTREET FLOOD WIDTH(FEET) =  24.56
  FLOW VELOCITY(FEET/SEC.) =  3.49   DEPTH*VELOCITY(FT*FT/SEC.) =   2.27
  LONGEST FLOWPATH FROM NODE  21060.00 TO NODE  21067.00 =  4528.08 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021067.0 TO NODE LR021067.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  37.49
  RAINFALL INTENSITY(INCH/HR) =   1.06
  AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.97
  AREA-AVERAGED Ap =  0.26
  EFFECTIVE STREAM AREA(ACRES) =    57.61
  TOTAL STREAM AREA(ACRES) =    57.61
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     43.50

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    100.07  19.52    1.569  0.93( 0.26) 0.28    84.9 LR021050.0
      2     43.50  37.49    1.061  0.97( 0.25) 0.26    57.6 LR021060.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    136.96  19.52    1.569  0.94( 0.26) 0.27   114.9 LR021050.0
      2    104.72  37.49    1.061  0.95( 0.26) 0.27   142.5 LR021060.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    136.96    Tc(MIN.) =    19.52
  EFFECTIVE AREA(ACRES) =   114.91   AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.94  AREA-AVERAGED Ap =  0.27
  TOTAL AREA(ACRES) =    142.52
  LONGEST FLOWPATH FROM NODE  21060.00 TO NODE  21067.00 =  4528.08 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021067.0 TO NODE LR021068.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1220.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1217.50
  FLOW LENGTH(FEET) =  1347.88   MANNING'S N =  0.013
```



```
USER SPECIFIED PIPE DIAMETER(INCH) =  84.00    NUMBER OF PIPES =   1
DEPTH OF FLOW IN  84.0 INCH PIPE IS  41.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   7.14
PIPE-FLOW(CFS) =    136.96
*NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
PIPEFLOW TRAVEL TIME(MIN.) =   3.34    Tc(MIN.) =  22.87
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.427
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"        A        7.32      0.98       0.60    32
RESIDENTIAL
"3-4 DWELLINGS/ACRE"        B        5.09      0.75       0.60    56
COMMERCIAL                  A       15.30      0.98       0.10    32
COMMERCIAL                  B       41.62      0.75       0.10    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.85
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.19
SUBAREA AREA(ACRES) =   69.33      SUBAREA RUNOFF(CFS) =   79.00
EFFECTIVE AREA(ACRES) =    184.24    AREA-AVERAGED Fm(INCH/HR) =  0.22
AREA-AVERAGED Fp(INCH/HR) =  0.92  AREA-AVERAGED Ap =  0.24
TOTAL AREA(ACRES) =    211.85        PEAK FLOW RATE(CFS) =    199.95

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

STREET CROSS-SECTION INFORMATION:
CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 39.00
DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
*NOTE: STREET-CAPACITY MAY BE EXCEEDED*
STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   63.00
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.94
  HALFSTREET FLOOD WIDTH(FEET) =   52.85
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.80
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.70
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
       AND L =  1347.9 FT WITH ELEVATION-DROP =   2.5 FT, IS   89.1 CFS,
       WHICH EXCEEDS THE SPECIFIED STREET CAPACITY AT NODE  21068.00

** PEAK FLOW RATE TABLE **
 STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
 NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
    1    199.95  22.87    1.427  0.92( 0.22) 0.24   184.2 LR021050.0
    2    148.54  41.07    1.004  0.92( 0.23) 0.24   211.9 LR021060.0
NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) =    199.95  Tc(MIN.) =  22.87
AREA-AVERAGED Fm(INCH/HR) =  0.22  AREA-AVERAGED Fp(INCH/HR) =  0.92
```

```
  AREA-AVERAGED Ap =  0.24  EFFECTIVE AREA(ACRES) =    184.24
  LONGEST FLOWPATH FROM NODE  21060.00 TO NODE  21068.00 =  5875.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021068.0 TO NODE LR021069.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1217.50
  DOWNSTREAM NODE ELEVATION(FEET) =  1215.00
  FLOW LENGTH(FEET) =  1146.78   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  93.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  93.0 INCH PIPE IS  47.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.34
  PIPE-FLOW(CFS) =    199.95
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   2.44    Tc(MIN.) =  25.30
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.343
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.21      0.75      0.60    56
  COMMERCIAL                 B       33.09      0.75      0.10    56
  PUBLIC PARK                B        0.04      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.12
  SUBAREA AREA(ACRES) =   34.34      SUBAREA RUNOFF(CFS) =   38.77
  EFFECTIVE AREA(ACRES) =    218.58    AREA-AVERAGED Fm(INCH/HR) =  0.23
  AREA-AVERAGED Fp(INCH/HR) =  0.91  AREA-AVERAGED Ap =  0.26
  TOTAL AREA(ACRES) =    246.19        PEAK FLOW RATE(CFS) =    218.51

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 39.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   18.56
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.65
    HALFSTREET FLOOD WIDTH(FEET) =   24.43
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.51
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.97

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
```



```
      1    224.77  25.30    1.343  0.90( 0.20) 0.22   218.6 LR021050.0
      2    168.72  43.69    0.968  0.91( 0.21) 0.23   246.2 LR021060.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    224.77  Tc(MIN.) =  25.30
  AREA-AVERAGED Fm(INCH/HR) =  0.20  AREA-AVERAGED Fp(INCH/HR) =  0.90
  AREA-AVERAGED Ap =  0.22  EFFECTIVE AREA(ACRES) =    218.58
  LONGEST FLOWPATH FROM NODE  21060.00 TO NODE  21069.00 =  7022.74 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021069.0 TO NODE LR021069.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    224.77  25.30    1.343  0.90( 0.20) 0.22   218.6 LR021050.0
      2    168.72  43.69    0.968  0.91( 0.21) 0.23   246.2 LR021060.0
  LONGEST FLOWPATH FROM NODE  21060.00 TO NODE  21069.00 =  7022.74 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     3337.83    Tc(MIN.) =  64.35
  AREA-AVERAGED Fm(INCH/HR) =  0.51    Ybar = 0.59
  TOTAL AREA(ACRES) =   10647.21
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21069.00 = 45066.88 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.81;3H= 1.42;6H= 2.03;24H= 4.15
  S-GRAPH: VALLEY(DEV.)= 71.4%;VALLEY(UNDEV.)/DESERT= 28.6%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 1.07; LAG(HR) = 0.86; Fm(INCH/HR) = 0.50; Ybar = 0.59
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.66; 30M = 0.66; 1HR = 0.67;
  3HR = 0.94; 6HR = 0.97; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  10893.40
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21069.00 = 45066.88 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0310; Lca/L=0.4,n=.0278; Lca/L=0.5,n=.0255;Lca/L=0.6,n=.0238
  TIME OF PEAK FLOW(HR) = 16.92  RUNOFF VOLUME(AF) =    1595.36
  PEAK FLOW RATE(CFS) =    3400.49

****************************************************************************
  FLOW PROCESS FROM NODE LR021069.0 TO NODE LR021069.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021069.0 TO NODE LR021070.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1215.00  DOWNSTREAM(FEET) =   1183.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2795.47   CHANNEL SLOPE =  0.0114
  CHANNEL BASE(FEET) =   18.00   "Z" FACTOR =   2.000
```

```
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   9.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   3400.49
  FLOW VELOCITY(FEET/SEC.) =  24.29   FLOW DEPTH(FEET) =   5.00
  TRAVEL TIME(MIN.) =   1.92   Tc(MIN.) =  66.26
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21070.00 = 47862.35 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021070.0 TO NODE LR021070.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  66.26
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.754
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B      108.13      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       17.27      0.75      0.60    56
  PUBLIC PARK                B        5.11      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.20
  SUBAREA AREA(ACRES) =  130.51
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.81;3H= 1.42;6H= 2.03;24H= 4.14
  S-GRAPH: VALLEY(DEV.)= 71.7%;VALLEY(UNDEV.)/DESERT= 28.3%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 1.10; LAG(HR) = 0.88; Fm(INCH/HR) = 0.50; Ybar = 0.58
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.65; 30M = 0.66; 1HR = 0.67;
  3HR = 0.94; 6HR = 0.97; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  11023.91
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21070.00 = 47862.35 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0303; Lca/L=0.4,n=.0271; Lca/L=0.5,n=.0249;Lca/L=0.6,n=.0233
  TIME OF PEAK FLOW(HR) = 16.92  RUNOFF VOLUME(AF) =    1625.20
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   3420.49
  TOTAL AREA(ACRES) =  11023.91       PEAK FLOW RATE(CFS) =    3420.49

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.34; 6HR = 1.85; 24HR = 3.44

****************************************************************************
  FLOW PROCESS FROM NODE LR021070.0 TO NODE LR021070.0 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 21070.dna
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =  11023.91  TC(MIN.) =     66.26
  AREA-AVERAGED Fm(INCH/HR)=  0.50   Ybar =  0.58
  PEAK FLOW RATE(CFS)   =   3420.49
============================================================================
============================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

```
******************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
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             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                        Analysis prepared by:

                        San Bernardino County
                  Transportation/ Flood Control Department

                        Water Resources Division

 ************************ DESCRIPTION OF STUDY *************************
* LR0211ZZ                                                             *
* 10-Year Storm                                                        *
*                                                                      *
 **********************************************************************

  FILE NAME: LR0211ZZ.Z10
  TIME/DATE OF STUDY: 09:58 02/22/2006
==============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 0.8000

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
```



```
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


******************************************************************************
  FLOW PROCESS FROM NODE LR021100.0 TO NODE LR021101.0 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   678.31
  ELEVATION DATA: UPSTREAM(FEET) =   1870.00  DOWNSTREAM(FEET) =   1820.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.418
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.430
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.91      0.75       0.60    56    9.42
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.56      0.75       0.70    56   10.01
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA RUNOFF(CFS) =     12.88
  TOTAL AREA(ACRES) =      7.47   PEAK FLOW RATE(CFS) =     12.88

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

******************************************************************************
  FLOW PROCESS FROM NODE LR021101.0 TO NODE LR021102.0 IS CODE =  54
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1820.00  DOWNSTREAM(FEET) =   1770.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   733.55   CHANNEL SLOPE =  0.0682
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   5.000
```

```
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     12.88
  FLOW VELOCITY(FEET/SEC.) =   4.46   FLOW DEPTH(FEET) =   0.76
  TRAVEL TIME(MIN.) =   2.74   Tc(MIN.) =  12.16
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21102.00 =  1411.86 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021102.0 TO NODE LR021102.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  12.16
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.085
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       10.44      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.19      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   12.63      SUBAREA RUNOFF(CFS) =   17.89
  EFFECTIVE AREA(ACRES) =     20.10   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     20.10       PEAK FLOW RATE(CFS) =      28.45

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

****************************************************************************
  FLOW PROCESS FROM NODE LR021102.0 TO NODE LR021103.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1770.00  DOWNSTREAM(FEET) =   1750.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   514.94   CHANNEL SLOPE =  0.0388
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     28.45
  FLOW VELOCITY(FEET/SEC.) =   4.42   FLOW DEPTH(FEET) =   1.13
  TRAVEL TIME(MIN.) =   1.94   Tc(MIN.) =  14.10
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21103.00 =  1926.80 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021103.0 TO NODE LR021103.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  14.10
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.907
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.23      0.75      0.60    56
  RESIDENTIAL
```



```
  "2 DWELLINGS/ACRE"         B        8.43      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    9.66      SUBAREA RUNOFF(CFS) =   12.11
  EFFECTIVE AREA(ACRES) =     29.76   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     29.76       PEAK FLOW RATE(CFS) =      37.36

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

****************************************************************************
  FLOW PROCESS FROM NODE LR021103.0 TO NODE LR021104.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1750.00  DOWNSTREAM(FEET) =   1715.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   660.67   CHANNEL SLOPE =  0.0530
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     37.36
  FLOW VELOCITY(FEET/SEC.) =   5.30   FLOW DEPTH(FEET) =   1.19
  TRAVEL TIME(MIN.) =   2.08   Tc(MIN.) =  16.18
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21104.00 =  2587.47 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021104.0 TO NODE LR021104.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  16.18
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.756
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       20.18      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.62      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   24.80      SUBAREA RUNOFF(CFS) =   27.83
  EFFECTIVE AREA(ACRES) =     54.56   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     54.56       PEAK FLOW RATE(CFS) =      61.14

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

****************************************************************************
  FLOW PROCESS FROM NODE LR021104.0 TO NODE LR021105.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1715.00  DOWNSTREAM ELEVATION(FEET) = 1705.00
  STREET LENGTH(FEET) =   402.43   CURB HEIGHT(INCHES) =  8.0
```

```
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      63.05
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.65
    HALFSTREET FLOOD WIDTH(FEET) =   24.45
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.11
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.31
  STREET FLOW TRAVEL TIME(MIN.) =   1.31   Tc(MIN.) =  17.49
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.676
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.78      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.85      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    3.63      SUBAREA RUNOFF(CFS) =    3.82
  EFFECTIVE AREA(ACRES) =     58.19    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     58.19        PEAK FLOW RATE(CFS) =      61.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.64   HALFSTREET FLOOD WIDTH(FEET) =  24.15
  FLOW VELOCITY(FEET/SEC.) =  5.07   DEPTH*VELOCITY(FT*FT/SEC.) =   3.25
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21105.00 =  2989.90 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021105.0 TO NODE LR021106.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1705.00  DOWNSTREAM ELEVATION(FEET) = 1690.00
  STREET LENGTH(FEET) =   562.31   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
```



```
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.86

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      64.08
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.64
    HALFSTREET FLOOD WIDTH(FEET) =   24.27
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.27
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.39
  STREET FLOW TRAVEL TIME(MIN.) =   1.78   Tc(MIN.) =  19.27
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.582
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.35      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.77      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    6.12      SUBAREA RUNOFF(CFS) =    5.88
  EFFECTIVE AREA(ACRES) =     64.31    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     64.31        PEAK FLOW RATE(CFS) =      61.94

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.64   HALFSTREET FLOOD WIDTH(FEET) =  23.98
  FLOW VELOCITY(FEET/SEC.) =  5.21   DEPTH*VELOCITY(FT*FT/SEC.) =   3.33
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21106.00 =  3552.21 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021106.0 TO NODE LR021107.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1690.00  DOWNSTREAM ELEVATION(FEET) = 1670.00
  STREET LENGTH(FEET) =   483.05   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.77

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      65.27
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.61
```

```
  HALFSTREET FLOOD WIDTH(FEET) =   22.46
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.24
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.79
 STREET FLOW TRAVEL TIME(MIN.) =   1.29   Tc(MIN.) =  20.56
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.521
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        6.11      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.21      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
 SUBAREA AREA(ACRES) =     7.32      SUBAREA RUNOFF(CFS) =    6.65
 EFFECTIVE AREA(ACRES) =     71.63    AREA-AVERAGED Fm(INCH/HR) =  0.51
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
 TOTAL AREA(ACRES) =     71.63        PEAK FLOW RATE(CFS) =      65.10

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.61   HALFSTREET FLOOD WIDTH(FEET) =  22.46
 FLOW VELOCITY(FEET/SEC.) =  6.22   DEPTH*VELOCITY(FT*FT/SEC.) =   3.78
 LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21107.00 =  4035.26 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021107.0 TO NODE LR021108.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1670.00  DOWNSTREAM ELEVATION(FEET) = 1640.00
 STREET LENGTH(FEET) =   579.31   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.74

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      79.67
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.62
   HALFSTREET FLOOD WIDTH(FEET) =   23.22
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.14
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.44
 STREET FLOW TRAVEL TIME(MIN.) =   1.35   Tc(MIN.) =  21.91
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.464
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```



```
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B       28.69      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        5.30      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
 SUBAREA AREA(ACRES) =   33.99      SUBAREA RUNOFF(CFS) =   29.13
 EFFECTIVE AREA(ACRES) =    105.62    AREA-AVERAGED Fm(INCH/HR) =  0.51
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
 TOTAL AREA(ACRES) =    105.62        PEAK FLOW RATE(CFS) =      90.56

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.65   HALFSTREET FLOOD WIDTH(FEET) =  24.45
 FLOW VELOCITY(FEET/SEC.) =  7.34   DEPTH*VELOCITY(FT*FT/SEC.) =   4.75
 LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21108.00 =  4614.57 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021108.0 TO NODE LR021109.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1640.00  DOWNSTREAM ELEVATION(FEET) = 1600.00
 STREET LENGTH(FEET) =  1132.55   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.80

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      99.59
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.70
   HALFSTREET FLOOD WIDTH(FEET) =   27.59
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.64
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.64
 STREET FLOW TRAVEL TIME(MIN.) =   2.84   Tc(MIN.) =  24.75
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.361
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B       21.44      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        2.32      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
 SUBAREA AREA(ACRES) =   23.76      SUBAREA RUNOFF(CFS) =   18.06
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  EFFECTIVE AREA(ACRES) =    129.38    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =    129.38        PEAK FLOW RATE(CFS) =      98.79

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.70   HALFSTREET FLOOD WIDTH(FEET) =  27.53
  FLOW VELOCITY(FEET/SEC.) =  6.62   DEPTH*VELOCITY(FT*FT/SEC.) =   4.61
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21109.00 =  5747.12 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021109.0 TO NODE LR021110.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1600.00  DOWNSTREAM ELEVATION(FEET) = 1550.00
  STREET LENGTH(FEET) =   761.67   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     101.63
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.65
    HALFSTREET FLOOD WIDTH(FEET) =   24.39
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.28
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.35
  STREET FLOW TRAVEL TIME(MIN.) =   1.53   Tc(MIN.) =  26.29
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.313
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.59      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.29      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    7.88      SUBAREA RUNOFF(CFS) =    5.68
  EFFECTIVE AREA(ACRES) =    137.26    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    137.26        PEAK FLOW RATE(CFS) =      98.86

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
```



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  DEPTH(FEET) = 0.64   HALFSTREET FLOOD WIDTH(FEET) =  24.15
  FLOW VELOCITY(FEET/SEC.) =  8.21   DEPTH*VELOCITY(FT*FT/SEC.) =   5.26
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21110.00 =  6508.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021110.0 TO NODE LR021129.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1550.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1495.00
  FLOW LENGTH(FEET) =  1519.57   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  20.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.00
  PIPE-FLOW(CFS) =     98.86
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.27    Tc(MIN.) =  27.55
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21129.00 =  8028.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021129.0 TO NODE LR021129.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  27.55
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.276
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       21.30      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   21.30      SUBAREA RUNOFF(CFS) =   15.86
  EFFECTIVE AREA(ACRES) =    158.56   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.67
  TOTAL AREA(ACRES) =    158.56        PEAK FLOW RATE(CFS) =     110.21

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

****************************************************************************
  FLOW PROCESS FROM NODE LR021129.0 TO NODE LR021129.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021121.0 TO NODE LR021122.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   969.86
  ELEVATION DATA: UPSTREAM(FEET) =   1830.00  DOWNSTREAM(FEET) =   1770.00
```

```
  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.254
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.184
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.27      0.75      0.60    56   11.25
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.70      0.75      0.70    56   11.96
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA RUNOFF(CFS) =     10.50
  TOTAL AREA(ACRES) =      6.97   PEAK FLOW RATE(CFS) =     10.50

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

****************************************************************************
  FLOW PROCESS FROM NODE LR021122.0 TO NODE LR021123.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1770.00  DOWNSTREAM ELEVATION(FEET) = 1700.00
  STREET LENGTH(FEET) =  1318.97   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.66

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      17.12
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.38
    HALFSTREET FLOOD WIDTH(FEET) =   12.73
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.92
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.88
  STREET FLOW TRAVEL TIME(MIN.) =   4.46   Tc(MIN.) =  15.72
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.787
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.67      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       10.86      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =   11.53      SUBAREA RUNOFF(CFS) =   13.16
  EFFECTIVE AREA(ACRES) =     18.50    AREA-AVERAGED Fm(INCH/HR) =  0.52
```



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  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     18.50        PEAK FLOW RATE(CFS) =      21.17

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.40   HALFSTREET FLOOD WIDTH(FEET) =  13.90
  FLOW VELOCITY(FEET/SEC.) =  5.16   DEPTH*VELOCITY(FT*FT/SEC.) =   2.09
  LONGEST FLOWPATH FROM NODE  21121.00 TO NODE  21123.00 =  2288.83 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021123.0 TO NODE LR021124.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1700.00  DOWNSTREAM ELEVATION(FEET) = 1625.00
  STREET LENGTH(FEET) =  1863.96   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      35.97
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.49
    HALFSTREET FLOOD WIDTH(FEET) =   18.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.34
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.60
  STREET FLOW TRAVEL TIME(MIN.) =   5.82   Tc(MIN.) =  21.54
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.479
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.04      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       29.70      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =   33.74      SUBAREA RUNOFF(CFS) =   29.29
  EFFECTIVE AREA(ACRES) =     52.24    AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     52.24        PEAK FLOW RATE(CFS) =      45.34

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
```

```
  DEPTH(FEET) = 0.51   HALFSTREET FLOOD WIDTH(FEET) =  18.75
  FLOW VELOCITY(FEET/SEC.) =  5.84   DEPTH*VELOCITY(FT*FT/SEC.) =   3.01
  LONGEST FLOWPATH FROM NODE  21121.00 TO NODE  21124.00 =  4152.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021124.0 TO NODE LR021125.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1625.00  DOWNSTREAM ELEVATION(FEET) = 1590.00
  STREET LENGTH(FEET) =   472.91   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.63

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      47.28
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.48
    HALFSTREET FLOOD WIDTH(FEET) =   17.88
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.13
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.45
  STREET FLOW TRAVEL TIME(MIN.) =   1.11   Tc(MIN.) =  22.64
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.436
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.00      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.67      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    4.67      SUBAREA RUNOFF(CFS) =    3.88
  EFFECTIVE AREA(ACRES) =     56.91    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     56.91        PEAK FLOW RATE(CFS) =      47.16

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.48   HALFSTREET FLOOD WIDTH(FEET) =  17.80
  FLOW VELOCITY(FEET/SEC.) =  7.17   DEPTH*VELOCITY(FT*FT/SEC.) =   3.46
  LONGEST FLOWPATH FROM NODE  21121.00 TO NODE  21125.00 =  4625.70 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021125.0 TO NODE LR021126.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
```



```
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1590.00  DOWNSTREAM ELEVATION(FEET) = 1570.00
  STREET LENGTH(FEET) =   502.51   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      49.47
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.53
    HALFSTREET FLOOD WIDTH(FEET) =   19.36
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.01
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.17
  STREET FLOW TRAVEL TIME(MIN.) =   1.39   Tc(MIN.) =  24.04
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.385
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.19      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.64      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA AREA(ACRES) =    5.83      SUBAREA RUNOFF(CFS) =    4.63
  EFFECTIVE AREA(ACRES) =     62.74    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     62.74        PEAK FLOW RATE(CFS) =      49.20

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.53   HALFSTREET FLOOD WIDTH(FEET) =  19.36
  FLOW VELOCITY(FEET/SEC.) =  5.98   DEPTH*VELOCITY(FT*FT/SEC.) =   3.15
  LONGEST FLOWPATH FROM NODE  21121.00 TO NODE  21126.00 =  5128.21 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021126.0 TO NODE LR021126.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  24.04
  RAINFALL INTENSITY(INCH/HR) =   1.39
  AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75
```

```
  AREA-AVERAGED Ap =  0.69
  EFFECTIVE STREAM AREA(ACRES) =    62.74
  TOTAL STREAM AREA(ACRES) =    62.74
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     49.20

****************************************************************************
  FLOW PROCESS FROM NODE LR021150.0 TO NODE LR021151.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   912.75
  ELEVATION DATA: UPSTREAM(FEET) =   1700.00  DOWNSTREAM(FEET) =   1685.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   14.318
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.890
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.53      0.75      0.70    56   15.22
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.32      0.75      0.60    56   14.32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA RUNOFF(CFS) =      8.44
  TOTAL AREA(ACRES) =      6.85   PEAK FLOW RATE(CFS) =      8.44

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

****************************************************************************
  FLOW PROCESS FROM NODE LR021151.0 TO NODE LR021152.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1685.00  DOWNSTREAM ELEVATION(FEET) = 1630.00
  STREET LENGTH(FEET) =   659.39   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.59

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      15.36
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.35
    HALFSTREET FLOOD WIDTH(FEET) =   11.09
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.70
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.98
```



```
  STREET FLOW TRAVEL TIME(MIN.) =   1.93   Tc(MIN.) =  16.25
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.752
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       10.34      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.04      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   12.38      SUBAREA RUNOFF(CFS) =   13.82
  EFFECTIVE AREA(ACRES) =     19.23    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     19.23        PEAK FLOW RATE(CFS) =      21.42

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.38   HALFSTREET FLOOD WIDTH(FEET) =  12.73
  FLOW VELOCITY(FEET/SEC.) =  6.16   DEPTH*VELOCITY(FT*FT/SEC.) =   2.35
  LONGEST FLOWPATH FROM NODE  21150.00 TO NODE  21152.00 =  1572.14 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021152.0 TO NODE LR021153.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1630.00  DOWNSTREAM ELEVATION(FEET) = 1590.00
  STREET LENGTH(FEET) =   730.95   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.66

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      27.21
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.43
    HALFSTREET FLOOD WIDTH(FEET) =   15.23
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.58
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.41
  STREET FLOW TRAVEL TIME(MIN.) =   2.18   Tc(MIN.) =  18.43
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.624
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.40      0.75      0.70    56
  RESIDENTIAL
```

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  "3-4 DWELLINGS/ACRE"       B        1.41      0.75      0.60    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.11      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.79
  SUBAREA AREA(ACRES) =   11.92      SUBAREA RUNOFF(CFS) =   11.57
  EFFECTIVE AREA(ACRES) =     31.15    AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =     31.15        PEAK FLOW RATE(CFS) =      30.78

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.45   HALFSTREET FLOOD WIDTH(FEET) =  16.01
  FLOW VELOCITY(FEET/SEC.) =  5.74   DEPTH*VELOCITY(FT*FT/SEC.) =   2.56
  LONGEST FLOWPATH FROM NODE  21150.00 TO NODE  21153.00 =  2303.09 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021153.0 TO NODE LR021126.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1590.00  DOWNSTREAM ELEVATION(FEET) = 1570.00
  STREET LENGTH(FEET) =   807.57   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      34.52
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.51
    HALFSTREET FLOOD WIDTH(FEET) =   18.56
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.53
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.32
  STREET FLOW TRAVEL TIME(MIN.) =   2.97   Tc(MIN.) =  21.40
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.485
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        7.02      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.50      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    8.52      SUBAREA RUNOFF(CFS) =    7.47
  EFFECTIVE AREA(ACRES) =     39.67    AREA-AVERAGED Fm(INCH/HR) =  0.52
```



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  AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.72
  TOTAL AREA(ACRES) =     39.67        PEAK FLOW RATE(CFS) =      34.35

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.51   HALFSTREET FLOOD WIDTH(FEET) =  18.56
  FLOW VELOCITY(FEET/SEC.) =  4.51   DEPTH*VELOCITY(FT*FT/SEC.) =   2.30
  LONGEST FLOWPATH FROM NODE  21150.00 TO NODE  21126.00 =  3110.66 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021126.0 TO NODE LR021126.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  21.40
  RAINFALL INTENSITY(INCH/HR) =   1.49
  AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.73
  AREA-AVERAGED Ap =  0.72
  EFFECTIVE STREAM AREA(ACRES) =    39.67
  TOTAL STREAM AREA(ACRES) =    39.67
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     34.35

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     49.20  24.04    1.385  0.75( 0.51) 0.69    62.7 LR021121.0
      2     34.35  21.40    1.485  0.73( 0.52) 0.72    39.7 LR021150.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     83.18  21.40    1.485  0.74( 0.52) 0.70    95.5 LR021150.0
      2     79.98  24.04    1.385  0.74( 0.52) 0.70   102.4 LR021121.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     83.18    Tc(MIN.) =    21.40
  EFFECTIVE AREA(ACRES) =    95.53   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =    102.41
  LONGEST FLOWPATH FROM NODE  21121.00 TO NODE  21126.00 =  5128.21 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021126.0 TO NODE LR021127.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1570.00  DOWNSTREAM ELEVATION(FEET) = 1557.00
  STREET LENGTH(FEET) =   322.81   CURB HEIGHT(INCHES) =  6.0
```

```
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      84.41
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.61
    HALFSTREET FLOOD WIDTH(FEET) =   23.51
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.16
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.37
  STREET FLOW TRAVEL TIME(MIN.) =   0.75   Tc(MIN.) =  22.15
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.455
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.16      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.72      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    2.88      SUBAREA RUNOFF(CFS) =    2.46
  EFFECTIVE AREA(ACRES) =     98.41    AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =    105.29        PEAK FLOW RATE(CFS) =      83.18
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.61   HALFSTREET FLOOD WIDTH(FEET) =  23.39
  FLOW VELOCITY(FEET/SEC.) =  7.13   DEPTH*VELOCITY(FT*FT/SEC.) =   4.33
  LONGEST FLOWPATH FROM NODE  21121.00 TO NODE  21127.00 =  5451.02 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021127.0 TO NODE LR021128.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1557.00  DOWNSTREAM(FEET) =   1535.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   354.44   CHANNEL SLOPE =  0.0621
  CHANNEL BASE(FEET) =    6.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     83.18
  FLOW VELOCITY(FEET/SEC.) =   9.29   FLOW DEPTH(FEET) =   1.09
  TRAVEL TIME(MIN.) =   0.64   Tc(MIN.) =  22.79
  LONGEST FLOWPATH FROM NODE  21121.00 TO NODE  21128.00 =  5805.46 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR021128.0 TO NODE LR021128.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  22.79
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.430
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       10.17      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       45.95      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   56.12      SUBAREA RUNOFF(CFS) =   46.47
  EFFECTIVE AREA(ACRES) =    154.53   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =    161.41       PEAK FLOW RATE(CFS) =     127.32

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

****************************************************************************
  FLOW PROCESS FROM NODE LR021128.0 TO NODE LR021129.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1535.00  DOWNSTREAM(FEET) =   1495.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1036.57   CHANNEL SLOPE =  0.0386
  CHANNEL BASE(FEET) =    6.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    127.32
  FLOW VELOCITY(FEET/SEC.) =   8.90   FLOW DEPTH(FEET) =   1.57
  TRAVEL TIME(MIN.) =   1.94   Tc(MIN.) =  24.73
  LONGEST FLOWPATH FROM NODE  21121.00 TO NODE  21129.00 =  6842.03 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021129.0 TO NODE LR021129.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  24.73
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.362
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       17.92      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   17.92      SUBAREA RUNOFF(CFS) =   14.72
  EFFECTIVE AREA(ACRES) =    172.45   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    179.33       PEAK FLOW RATE(CFS) =     132.52
```

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 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

****************************************************************************
 FLOW PROCESS FROM NODE LR021129.0 TO NODE LR021129.0 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    132.52  24.73    1.362  0.74( 0.51) 0.68   172.5 LR021150.0
     2    124.60  27.41    1.280  0.74( 0.51) 0.68   179.3 LR021121.0
 LONGEST FLOWPATH FROM NODE  21121.00 TO NODE  21129.00 =  6842.03 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    110.21  27.55    1.276  0.75( 0.50) 0.67   158.6 LR021100.0
 LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21129.00 =  8028.36 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    242.39  24.73    1.362  0.75( 0.51) 0.68   314.8 LR021150.0
     2    234.80  27.41    1.280  0.75( 0.51) 0.68   337.1 LR021121.0
     3    234.17  27.55    1.276  0.75( 0.51) 0.68   337.9 LR021100.0
   TOTAL AREA(ACRES) =    337.89

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      242.39  Tc(MIN.) =   24.729
 EFFECTIVE AREA(ACRES) =    314.76  AREA-AVERAGED Fm(INCH/HR) =  0.51
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
 TOTAL AREA(ACRES) =    337.89
 LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21129.00 =  8028.36 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021129.0 TO NODE LR021129.0 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE LR021129.0 TO NODE LR021130.0 IS CODE =  42
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1495.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1460.00
 FLOW LENGTH(FEET) =  1595.06   MANNING'S N =  0.013

 USER SPECIFIED PIPE DIAMETER(INCH) =  72.00    NUMBER OF PIPES =   1
 DEPTH OF FLOW IN  72.0 INCH PIPE IS  31.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  20.76
 PIPE-FLOW(CFS) =    242.39
```



```
 *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
 PIPEFLOW TRAVEL TIME(MIN.) =   1.28    Tc(MIN.) =  26.01
 LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21130.00 =  9623.42 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021130.0 TO NODE LR021130.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  26.01
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.321
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       64.12      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =   64.12      SUBAREA RUNOFF(CFS) =   50.33
 EFFECTIVE AREA(ACRES) =    378.88   AREA-AVERAGED Fm(INCH/HR) =  0.50
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.67
 TOTAL AREA(ACRES) =    402.01       PEAK FLOW RATE(CFS) =     281.21

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

****************************************************************************
 FLOW PROCESS FROM NODE LR021130.0 TO NODE LR021146.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1460.00  DOWNSTREAM(FEET) =   1403.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1317.93   CHANNEL SLOPE =  0.0432
 CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   4.00
 CHANNEL FLOW THRU SUBAREA(CFS) =    281.21
 FLOW VELOCITY(FEET/SEC.) =  11.30   FLOW DEPTH(FEET) =   2.06
 TRAVEL TIME(MIN.) =   1.94   Tc(MIN.) =  27.95
 LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21146.00 = 10941.35 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021146.0 TO NODE LR021146.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  27.95
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.265
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       22.28      0.75      0.60    56
 AGRICULTURAL FAIR COVER
 "ORCHARDS"                 B        1.50      0.63      1.00    65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
 SUBAREA AREA(ACRES) =   23.78      SUBAREA RUNOFF(CFS) =   17.23
```

```
  EFFECTIVE AREA(ACRES) =    402.66   AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.66
  TOTAL AREA(ACRES) =    425.79       PEAK FLOW RATE(CFS) =     281.21
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

****************************************************************************
  FLOW PROCESS FROM NODE LR021146.0 TO NODE LR021146.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  27.95
  RAINFALL INTENSITY(INCH/HR) =   1.27
  AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.66
  EFFECTIVE STREAM AREA(ACRES) =   402.66
  TOTAL STREAM AREA(ACRES) =   425.79
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    281.21

****************************************************************************
  FLOW PROCESS FROM NODE LR021140.0 TO NODE LR021141.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   286.67
  ELEVATION DATA: UPSTREAM(FEET) =   1460.00  DOWNSTREAM(FEET) =   1450.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.750
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.731
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.17      0.75      0.60    56    7.75
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =      4.46
  TOTAL AREA(ACRES) =      2.17   PEAK FLOW RATE(CFS) =      4.46

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

****************************************************************************
  FLOW PROCESS FROM NODE LR021141.0 TO NODE LR021142.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1450.00  DOWNSTREAM ELEVATION(FEET) = 1445.00
  STREET LENGTH(FEET) =   752.60   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00
```



```
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.62
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.41
    HALFSTREET FLOOD WIDTH(FEET) =   13.98
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.84
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.75
  STREET FLOW TRAVEL TIME(MIN.) =   6.82   Tc(MIN.) =  14.57
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.870
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.85      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    4.85      SUBAREA RUNOFF(CFS) =    6.20
  EFFECTIVE AREA(ACRES) =      7.02    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =      7.02        PEAK FLOW RATE(CFS) =       8.98

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.42   HALFSTREET FLOOD WIDTH(FEET) =  14.91
  FLOW VELOCITY(FEET/SEC.) =  1.92   DEPTH*VELOCITY(FT*FT/SEC.) =   0.81
  LONGEST FLOWPATH FROM NODE  21140.00 TO NODE  21142.00 =  1039.27 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021142.0 TO NODE LR021143.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1445.00  DOWNSTREAM ELEVATION(FEET) = 1430.00
  STREET LENGTH(FEET) =   604.30   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.85
```

```
  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      13.91
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.40
  HALFSTREET FLOOD WIDTH(FEET) =   13.66
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.50
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.40
 STREET FLOW TRAVEL TIME(MIN.) =   2.88   Tc(MIN.) =  17.45
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.679
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        8.88      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =    8.88      SUBAREA RUNOFF(CFS) =    9.83
 EFFECTIVE AREA(ACRES) =     15.90    AREA-AVERAGED Fm(INCH/HR) =  0.45
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =     15.90        PEAK FLOW RATE(CFS) =      17.60

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.43   HALFSTREET FLOOD WIDTH(FEET) =  14.99
 FLOW VELOCITY(FEET/SEC.) =  3.72   DEPTH*VELOCITY(FT*FT/SEC.) =   1.58
 LONGEST FLOWPATH FROM NODE  21140.00 TO NODE  21143.00 =  1643.57 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021143.0 TO NODE LR021144.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1430.00  DOWNSTREAM ELEVATION(FEET) = 1413.00
 STREET LENGTH(FEET) =   592.37   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.82

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      20.64
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.44
  HALFSTREET FLOOD WIDTH(FEET) =   15.54
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.07
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.78
 STREET FLOW TRAVEL TIME(MIN.) =   2.42   Tc(MIN.) =  19.87
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.553
 SUBAREA LOSS RATE DATA(AMC  II):
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  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        6.11      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =    6.11      SUBAREA RUNOFF(CFS) =    6.07
 EFFECTIVE AREA(ACRES) =     22.01    AREA-AVERAGED Fm(INCH/HR) =  0.45
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =     22.01        PEAK FLOW RATE(CFS) =      21.87

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.44   HALFSTREET FLOOD WIDTH(FEET) =  15.85
 FLOW VELOCITY(FEET/SEC.) =  4.16   DEPTH*VELOCITY(FT*FT/SEC.) =   1.84
 LONGEST FLOWPATH FROM NODE  21140.00 TO NODE  21144.00 =  2235.94 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021144.0 TO NODE LR021145.0 IS CODE =  33
----------------------------------------------------------------------------
 >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
 >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1413.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1409.00
 FLOW LENGTH(FEET) =    90.21   MANNING'S N =  0.013

 USER SPECIFIED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
 DEPTH OF FLOW IN  42.0 INCH PIPE IS   9.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  14.21
 PIPE-FLOW(CFS) =     21.87
 *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
 PIPEFLOW TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =  19.98
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.547
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       13.65      0.75      0.60    56
 COMMERCIAL                 B        1.61      0.75      0.10    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.55
 SUBAREA AREA(ACRES) =   15.26      SUBAREA RUNOFF(CFS) =   15.63
 EFFECTIVE AREA(ACRES) =     37.27    AREA-AVERAGED Fm(INCH/HR) =  0.43
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.58
 TOTAL AREA(ACRES) =     37.27        PEAK FLOW RATE(CFS) =     37.39

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

 STREET CROSS-SECTION INFORMATION:
 CURB HEIGHT(INCHES) =  6.0       STREET HALFWIDTH(FEET) = 18.00
 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
```

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  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   15.53
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.38
    HALFSTREET FLOOD WIDTH(FEET) =   12.65
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.52
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.71
  LONGEST FLOWPATH FROM NODE  21140.00 TO NODE  21145.00 =  2326.15 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021145.0 TO NODE LR021146.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1409.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1403.00
  FLOW LENGTH(FEET) =   538.70   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  16.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.04
  PIPE-FLOW(CFS) =     37.39
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.95    Tc(MIN.) =  20.93
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.505
  SUBAREA AREA(ACRES) =    0.00      SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =     37.27    AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.58
  TOTAL AREA(ACRES) =     37.27        PEAK FLOW RATE(CFS) =     37.39
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 32.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  *NOTE: ESTIMATED PEAK FLOW DEFAULTED TO UPSTREAM PEAK FLOW;
         STREET HYDRAULICS NOT COMPUTED*
  LONGEST FLOWPATH FROM NODE  21140.00 TO NODE  21146.00 =  2864.85 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021146.0 TO NODE LR021146.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
```



```
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  20.93
  RAINFALL INTENSITY(INCH/HR) =   1.50
  AREA-AVERAGED Fm(INCH/HR) =  0.43
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.58
  EFFECTIVE STREAM AREA(ACRES) =    37.27
  TOTAL STREAM AREA(ACRES) =    37.27
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     37.39

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    280.39  28.03    1.263  0.75( 0.49) 0.66   402.7 LR021150.0
      1    269.43  30.75    1.195  0.75( 0.49) 0.66   425.0 LR021121.0
      1    268.65  30.89    1.191  0.75( 0.49) 0.66   425.8 LR021100.0
      2     37.39  20.93    1.505  0.75( 0.43) 0.58    37.3 LR021140.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    312.65  20.93    1.505  0.75( 0.49) 0.65   337.9 LR021140.0
      2    309.35  28.03    1.263  0.75( 0.49) 0.66   439.9 LR021150.0
      3    296.00  30.75    1.195  0.75( 0.49) 0.66   462.3 LR021121.0
      4    295.11  30.89    1.191  0.75( 0.49) 0.66   463.1 LR021100.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    312.65    Tc(MIN.) =    20.93
  EFFECTIVE AREA(ACRES) =   337.94   AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.65
  TOTAL AREA(ACRES) =    463.06
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21146.00 = 10941.35 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021146.0 TO NODE LR021165.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1403.00  DOWNSTREAM(FEET) =   1393.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   424.11   CHANNEL SLOPE =  0.0236
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   4.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    312.65
  FLOW VELOCITY(FEET/SEC.) =   9.35   FLOW DEPTH(FEET) =   2.55
  TRAVEL TIME(MIN.) =   0.76   Tc(MIN.) =  21.69
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21165.00 = 11365.46 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021165.0 TO NODE LR021165.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
```

```
==============================================================================

******************************************************************************
  FLOW PROCESS FROM NODE LR021154.0 TO NODE LR021154.2 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   709.46
  ELEVATION DATA: UPSTREAM(FEET) =   1720.00  DOWNSTREAM(FEET) =   1680.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.117
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.328
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        8.73      0.61      1.00    66   17.34
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.90      0.75      0.60    56   10.12
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        0.18      0.75      0.70    56   10.76
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.62
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.96
  SUBAREA RUNOFF(CFS) =     15.28
  TOTAL AREA(ACRES) =      9.81   PEAK FLOW RATE(CFS) =     15.28

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

******************************************************************************
  FLOW PROCESS FROM NODE LR021154.2 TO NODE LR021154.4 IS CODE =  54
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1680.00  DOWNSTREAM(FEET) =   1620.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   614.72   CHANNEL SLOPE =  0.0976
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     15.28
  FLOW VELOCITY(FEET/SEC.) =   5.32   FLOW DEPTH(FEET) =   0.76
  TRAVEL TIME(MIN.) =   1.93   Tc(MIN.) =  12.04
  LONGEST FLOWPATH FROM NODE  21154.00 TO NODE  21154.40 =  1324.18 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE LR021154.4 TO NODE LR021154.4 IS CODE =  81
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
  MAINLINE Tc(MIN) =  12.04
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.097
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       15.02      0.61      1.00    66
```



```
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.09      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.17      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.64
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.93
  SUBAREA AREA(ACRES) =   19.28      SUBAREA RUNOFF(CFS) =   26.08
  EFFECTIVE AREA(ACRES) =     29.09   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.63  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =     29.09       PEAK FLOW RATE(CFS) =      39.32

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

******************************************************************************
  FLOW PROCESS FROM NODE LR021154.4 TO NODE LR021155.0 IS CODE =  54
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1620.00  DOWNSTREAM(FEET) =   1580.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   874.03   CHANNEL SLOPE =  0.0458
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     39.32
  FLOW VELOCITY(FEET/SEC.) =   5.06   FLOW DEPTH(FEET) =   1.25
  TRAVEL TIME(MIN.) =   2.88   Tc(MIN.) =  14.92
  LONGEST FLOWPATH FROM NODE  21154.00 TO NODE  21155.00 =  2198.21 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE LR021155.0 TO NODE LR021155.0 IS CODE =  81
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
  MAINLINE Tc(MIN) =  14.92
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.844
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       17.09      0.61      1.00    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.24      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.47      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.64
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.93
  SUBAREA AREA(ACRES) =   21.80      SUBAREA RUNOFF(CFS) =   24.54
  EFFECTIVE AREA(ACRES) =     50.89   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.63  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =     50.89       PEAK FLOW RATE(CFS) =      57.24

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

******************************************************************************
  FLOW PROCESS FROM NODE LR021155.0 TO NODE LR021156.0 IS CODE =  54
------------------------------------------------------------------------------
```

```
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1580.00  DOWNSTREAM(FEET) =   1545.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1194.85   CHANNEL SLOPE =  0.0293
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     57.24
  FLOW VELOCITY(FEET/SEC.) =   4.71   FLOW DEPTH(FEET) =   1.56
  TRAVEL TIME(MIN.) =   4.23   Tc(MIN.) =  19.15
  LONGEST FLOWPATH FROM NODE  21154.00 TO NODE  21156.00 =  3393.06 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021156.0 TO NODE LR021156.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  19.15
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.587
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.30      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       39.32      0.75      0.70    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        7.87      0.61      1.00    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.72
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.74
  SUBAREA AREA(ACRES) =   51.49      SUBAREA RUNOFF(CFS) =   48.94
  EFFECTIVE AREA(ACRES) =    102.38   AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =    102.38       PEAK FLOW RATE(CFS) =      94.45

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

****************************************************************************
  FLOW PROCESS FROM NODE LR021156.0 TO NODE LR021157.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1545.00  DOWNSTREAM ELEVATION(FEET) = 1500.00
  STREET LENGTH(FEET) =   796.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.68
```



```
  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     101.65
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.61
  HALFSTREET FLOOD WIDTH(FEET) =   23.63
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.54
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.23
  STREET FLOW TRAVEL TIME(MIN.) =   1.55   Tc(MIN.) =  20.70
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.515
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       10.24      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.14      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
  SUBAREA AREA(ACRES) =   15.38      SUBAREA RUNOFF(CFS) =   14.41
  EFFECTIVE AREA(ACRES) =    117.76    AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =    117.76        PEAK FLOW RATE(CFS) =     102.17

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.61   HALFSTREET FLOOD WIDTH(FEET) =  23.69
  FLOW VELOCITY(FEET/SEC.) =  8.54   DEPTH*VELOCITY(FT*FT/SEC.) =   5.25
  LONGEST FLOWPATH FROM NODE  21154.00 TO NODE  21157.00 =  4189.56 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021157.0 TO NODE LR021163.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1500.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1452.00
  FLOW LENGTH(FEET) =  1406.44   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  20.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.74
  PIPE-FLOW(CFS) =    102.17
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.26    Tc(MIN.) =  21.97
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.462
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       19.67      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   19.67      SUBAREA RUNOFF(CFS) =   17.94
  EFFECTIVE AREA(ACRES) =    137.43    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.69  AREA-AVERAGED Ap =  0.78
```

```
  TOTAL AREA(ACRES) =    137.43        PEAK FLOW RATE(CFS) =    114.51

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  6.0       STREET HALFWIDTH(FEET) = 18.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   12.34
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.37
    HALFSTREET FLOOD WIDTH(FEET) =   12.18
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.85
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.43
  LONGEST FLOWPATH FROM NODE  21154.00 TO NODE  21163.00 =  5596.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021163.0 TO NODE LR021163.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  21.97
  RAINFALL INTENSITY(INCH/HR) =   1.46
  AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.69
  AREA-AVERAGED Ap =  0.78
  EFFECTIVE STREAM AREA(ACRES) =   137.43
  TOTAL STREAM AREA(ACRES) =   137.43
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    114.51

****************************************************************************
  FLOW PROCESS FROM NODE LR021160.0 TO NODE LR021161.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   381.26
  ELEVATION DATA: UPSTREAM(FEET) =   1545.00  DOWNSTREAM(FEET) =   1522.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.785
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.724
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.01      0.75      0.60    56    7.79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
```



```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     10.26
  TOTAL AREA(ACRES) =      5.01   PEAK FLOW RATE(CFS) =     10.26

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

****************************************************************************
  FLOW PROCESS FROM NODE LR021161.0 TO NODE LR021162.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1522.00  DOWNSTREAM(FEET) =   1500.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   409.32   CHANNEL SLOPE =  0.0537
  CHANNEL BASE(FEET) =    4.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     10.26
  FLOW VELOCITY(FEET/SEC.) =   4.91   FLOW DEPTH(FEET) =   0.43
  TRAVEL TIME(MIN.) =   1.39   Tc(MIN.) =   9.18
  LONGEST FLOWPATH FROM NODE  21160.00 TO NODE  21162.00 =   790.58 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021162.0 TO NODE LR021162.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =   9.18
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.468
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.71      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    4.71      SUBAREA RUNOFF(CFS) =    8.56
  EFFECTIVE AREA(ACRES) =      9.72   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =      9.72       PEAK FLOW RATE(CFS) =      17.67

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

****************************************************************************
  FLOW PROCESS FROM NODE LR021162.0 TO NODE LR021163.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1500.00  DOWNSTREAM(FEET) =   1452.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1513.07   CHANNEL SLOPE =  0.0317
  CHANNEL BASE(FEET) =    4.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     17.67
  FLOW VELOCITY(FEET/SEC.) =   4.88   FLOW DEPTH(FEET) =   0.68
  TRAVEL TIME(MIN.) =   5.17   Tc(MIN.) =  14.34
  LONGEST FLOWPATH FROM NODE  21160.00 TO NODE  21163.00 =  2303.65 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR021163.0 TO NODE LR021163.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  14.34
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.888
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       14.70      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   14.70      SUBAREA RUNOFF(CFS) =   19.04
  EFFECTIVE AREA(ACRES) =     24.42   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     24.42       PEAK FLOW RATE(CFS) =      31.63

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

****************************************************************************
  FLOW PROCESS FROM NODE LR021163.0 TO NODE LR021163.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  14.34
  RAINFALL INTENSITY(INCH/HR) =   1.89
  AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.60
  EFFECTIVE STREAM AREA(ACRES) =    24.42
  TOTAL STREAM AREA(ACRES) =    24.42
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     31.63

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    114.51  21.97    1.462  0.69( 0.54) 0.78   137.4 LR021154.0
      2     31.63  14.34    1.888  0.75( 0.45) 0.60    24.4 LR021160.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    140.81  14.34    1.888  0.70( 0.52) 0.74   114.1 LR021160.0
      2    136.78  21.97    1.462  0.69( 0.52) 0.75   161.8 LR021154.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    140.81    Tc(MIN.) =    14.34
  EFFECTIVE AREA(ACRES) =   114.15   AREA-AVERAGED Fm(INCH/HR) =  0.52
```



```
  AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.74
  TOTAL AREA(ACRES) =    161.85
  LONGEST FLOWPATH FROM NODE  21154.00 TO NODE  21163.00 =  5596.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021163.0 TO NODE LR021164.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1452.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1436.00
  FLOW LENGTH(FEET) =   667.61   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  25.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.77
  PIPE-FLOW(CFS) =    140.81
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.59    Tc(MIN.) =  14.93
  LONGEST FLOWPATH FROM NODE  21154.00 TO NODE  21164.00 =  6263.61 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021164.0 TO NODE LR021164.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  14.93
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.843
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       13.33      0.75      0.60    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        1.74      0.63      1.00    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.73
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.65
  SUBAREA AREA(ACRES) =   15.07      SUBAREA RUNOFF(CFS) =   18.62
  EFFECTIVE AREA(ACRES) =    129.22   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =    176.92       PEAK FLOW RATE(CFS) =     154.77

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

****************************************************************************
  FLOW PROCESS FROM NODE LR021164.0 TO NODE LR021165.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1436.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1393.00
  FLOW LENGTH(FEET) =  1236.24   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  24.5 INCHES
```

```
  PIPE-FLOW VELOCITY(FEET/SEC.) =  22.08
  PIPE-FLOW(CFS) =    154.77
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.93    Tc(MIN.) =  15.87
  LONGEST FLOWPATH FROM NODE  21154.00 TO NODE  21165.00 =  7499.85 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021165.0 TO NODE LR021165.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  15.87
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.777
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  SCHOOL                     B        1.72      0.75      0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       10.42      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   12.14      SUBAREA RUNOFF(CFS) =   14.51
  EFFECTIVE AREA(ACRES) =    141.36   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.72
  TOTAL AREA(ACRES) =    189.06       PEAK FLOW RATE(CFS) =     161.63

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

****************************************************************************
  FLOW PROCESS FROM NODE LR021165.0 TO NODE LR021165.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    160.82  15.96    1.771  0.70( 0.51) 0.72   141.4 LR021160.0
      2    150.78  23.61    1.400  0.70( 0.51) 0.73   189.1 LR021154.0
  LONGEST FLOWPATH FROM NODE  21154.00 TO NODE  21165.00 =  7499.85 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    312.65  21.69    1.473  0.75( 0.49) 0.65   337.9 LR021140.0
      2    309.35  28.79    1.243  0.75( 0.49) 0.66   439.9 LR021150.0
      3    296.00  31.52    1.177  0.75( 0.49) 0.66   462.3 LR021121.0
      4    295.11  31.66    1.174  0.75( 0.49) 0.66   463.1 LR021100.0
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21165.00 = 11365.46 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    460.36  15.96    1.771  0.73( 0.49) 0.68   390.1 LR021160.0
      2    465.95  21.69    1.473  0.73( 0.50) 0.68   515.0 LR021140.0
      3    462.54  23.61    1.400  0.73( 0.50) 0.68   554.6 LR021154.0
      4    433.38  28.79    1.243  0.73( 0.50) 0.68   629.0 LR021150.0
```



```
      5    408.84  31.52    1.177  0.73( 0.50) 0.68   651.3 LR021121.0
      6    407.41  31.66    1.174  0.73( 0.50) 0.68   652.1 LR021100.0
    TOTAL AREA(ACRES) =    652.12

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      465.95  Tc(MIN.) =   21.687
  EFFECTIVE AREA(ACRES) =    515.02  AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    652.12
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21165.00 = 11365.46 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021165.0 TO NODE LR021165.0 IS CODE =  71
----------------------------------------------------------------------------
  >>>>>PEAK FLOW RATE ESTIMATOR CHANGED TO UNIT-HYDROGRAPH METHOD<<<<<
  >>>>>USING TIME-OF-CONCENTRATION OF LONGEST FLOWPATH<<<<<
============================================================================
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.32;6H= 1.81;24H= 3.44
  S-GRAPH: VALLEY(DEV.)= 91.4%;VALLEY(UNDEV.)/DESERT=  8.6%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.53; LAG(HR) = 0.42; Fm(INCH/HR) = 0.50; Ybar = 0.62
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 1.00; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    652.12
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21165.00 = 11365.46 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0433; Lca/L=0.4,n=.0388; Lca/L=0.5,n=.0357;Lca/L=0.6,n=.0333
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =      79.25
  UNIT-HYDROGRAPH METHOD PEAK FLOW RATE(CFS) =    474.40
  TOTAL PEAK FLOW RATE(CFS) =    474.40 (SOURCE FLOW INCLUDED)
  RATIONAL METHOD PEAK FLOW RATE(CFS) =    465.95
   (UPSTREAM NODE PEAK FLOW RATE(CFS) =    465.95)
  PEAK FLOW RATE(CFS) USED =    474.40

****************************************************************************
  FLOW PROCESS FROM NODE LR021165.0 TO NODE LR021165.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021165.0 TO NODE LR021166.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1393.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1357.00
  FLOW LENGTH(FEET) =  1083.24   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  84.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  84.0 INCH PIPE IS  37.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  28.71
  PIPE-FLOW(CFS) =    474.40
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.63    Tc(MIN.) =  32.29
```

```
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21166.00 = 12448.70 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021166.0 TO NODE LR021166.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  32.29
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.160
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       28.30      0.75      0.60    56
  SCHOOL                     B       18.42      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   46.72
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.32;6H= 1.81;24H= 3.44
  S-GRAPH: VALLEY(DEV.)= 92.0%;VALLEY(UNDEV.)/DESERT=  8.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.54; LAG(HR) = 0.43; Fm(INCH/HR) = 0.49; Ybar = 0.62
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 1.00; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    698.84
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21166.00 = 12448.70 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0411; Lca/L=0.4,n=.0368; Lca/L=0.5,n=.0338;Lca/L=0.6,n=.0316
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =      85.58
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    504.26
  TOTAL AREA(ACRES) =    698.84       PEAK FLOW RATE(CFS) =     504.26

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

****************************************************************************
  FLOW PROCESS FROM NODE LR021166.0 TO NODE LR021167.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1357.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1320.00
  FLOW LENGTH(FEET) =  1316.79   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  84.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  84.0 INCH PIPE IS  40.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  27.41
  PIPE-FLOW(CFS) =    504.26
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.80    Tc(MIN.) =  33.09
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21167.00 = 13765.49 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021167.0 TO NODE LR021167.0 IS CODE =  81
----------------------------------------------------------------------------
```



```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  33.09
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.143
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       42.55      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   42.55
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.32;6H= 1.81;24H= 3.44
  S-GRAPH: VALLEY(DEV.)= 92.4%;VALLEY(UNDEV.)/DESERT=  7.6%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.55; LAG(HR) = 0.44; Fm(INCH/HR) = 0.49; Ybar = 0.61
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 1.00; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    741.39
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21167.00 = 13765.49 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0388; Lca/L=0.4,n=.0347; Lca/L=0.5,n=.0319;Lca/L=0.6,n=.0298
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =      91.34
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    527.04
  TOTAL AREA(ACRES) =    741.39       PEAK FLOW RATE(CFS) =     527.04

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

****************************************************************************
  FLOW PROCESS FROM NODE LR021167.0 TO NODE LR021167.0 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 21167.dna
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =    741.39  TC(MIN.) =     33.09
  AREA-AVERAGED Fm(INCH/HR)=  0.49   Ybar =  0.61
  PEAK FLOW RATE(CFS)   =    527.04
============================================================================
============================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                          San Bernardino County
                    Transportation/ Flood Control Department

                          Water Resources Division

  ************************ DESCRIPTION OF STUDY *************************
 * LR0212ZZ                                                             *
 * 10-Year Storm                                                        *
 *                                                                      *
  ************************************************************************

   FILE NAME: LR0212ZZ.Z10
   TIME/DATE OF STUDY: 09:58 02/22/2006
 ========================================================================
   USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
 ========================================================================
                     --*TIME-OF-CONCENTRATION MODEL*--

   USER SPECIFIED STORM EVENT(YEAR) =   10.00
   SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
   SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
   *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

   SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
   USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 0.8000

   *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

   *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
      HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
      WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
 NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
 ===  =====  =========  =================  ======  ===== ====== ===== =======
   1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
   2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
   3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
   4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
   5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
   6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
   7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
   8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
   9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
```



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  17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180

   GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
     1. Relative Flow-Depth =  0.20 FEET
        as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
     2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
    *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
     OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
    *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

   UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
     WATERSHED LAG = 0.80 * Tc
     USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
     1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
     FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
     PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
     SIERRA MADRE DEPTH-AREA FACTORS USED.
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


 ************************************************************************
   FLOW PROCESS FROM NODE LR021200.0 TO NODE LR021201.0 IS CODE =  21
 ------------------------------------------------------------------------
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
 ========================================================================
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   569.96
   ELEVATION DATA: UPSTREAM(FEET) =   1740.00  DOWNSTREAM(FEET) =   1707.00

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.219
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.461
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
   SCHOOL                    B        0.54      0.75       0.60    56    9.22
   RESIDENTIAL
   "3-4 DWELLINGS/ACRE"      B        1.10      0.75       0.60    56    9.22
   RESIDENTIAL
   "2 DWELLINGS/ACRE"        B        4.38      0.75       0.70    56    9.80
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
   SUBAREA RUNOFF(CFS) =     10.61
   TOTAL AREA(ACRES) =      6.02   PEAK FLOW RATE(CFS) =     10.61

   SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
   5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

 ************************************************************************
   FLOW PROCESS FROM NODE LR021201.0 TO NODE LR021202.0 IS CODE =  63
 ------------------------------------------------------------------------
   >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
 ========================================================================
   UPSTREAM ELEVATION(FEET) = 1707.00  DOWNSTREAM ELEVATION(FEET) = 1695.00
   STREET LENGTH(FEET) =   243.63   CURB HEIGHT(INCHES) =  8.0
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  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.74

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      13.00
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.38
    HALFSTREET FLOOD WIDTH(FEET) =   11.15
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.54
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.73
  STREET FLOW TRAVEL TIME(MIN.) =   0.89   Tc(MIN.) =  10.11
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.328
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.00      0.75      0.60    56
  SCHOOL                     B        1.16      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        0.69      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.62
  SUBAREA AREA(ACRES) =    2.85      SUBAREA RUNOFF(CFS) =    4.77
  EFFECTIVE AREA(ACRES) =      8.87    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.66
  TOTAL AREA(ACRES) =      8.87        PEAK FLOW RATE(CFS) =      14.66

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.39   HALFSTREET FLOOD WIDTH(FEET) =  11.73
  FLOW VELOCITY(FEET/SEC.) =  4.68   DEPTH*VELOCITY(FT*FT/SEC.) =   1.84
  LONGEST FLOWPATH FROM NODE  21200.00 TO NODE  21202.00 =   813.59 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021202.0 TO NODE LR021203.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1695.00  DOWNSTREAM ELEVATION(FEET) = 1675.00
  STREET LENGTH(FEET) =   482.35   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
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  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.77

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      21.77
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.45
    HALFSTREET FLOOD WIDTH(FEET) =   14.43
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.79
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.14
  STREET FLOW TRAVEL TIME(MIN.) =   1.68   Tc(MIN.) =  11.79
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.123
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        8.92      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.90      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    9.82      SUBAREA RUNOFF(CFS) =   14.20
  EFFECTIVE AREA(ACRES) =     18.69    AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.67
  TOTAL AREA(ACRES) =     18.69        PEAK FLOW RATE(CFS) =      27.23

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.47   HALFSTREET FLOOD WIDTH(FEET) =  15.83
  FLOW VELOCITY(FEET/SEC.) =  5.05   DEPTH*VELOCITY(FT*FT/SEC.) =   2.40
  LONGEST FLOWPATH FROM NODE  21200.00 TO NODE  21203.00 =  1295.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021203.0 TO NODE LR021204.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1675.00  DOWNSTREAM ELEVATION(FEET) = 1638.00
  STREET LENGTH(FEET) =   756.35   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.74

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      33.30
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.49
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  HALFSTREET FLOOD WIDTH(FEET) =   16.60
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.66
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.77
 STREET FLOW TRAVEL TIME(MIN.) =   2.23   Tc(MIN.) =  14.02
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.914
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        7.90      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.70      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
 SUBAREA AREA(ACRES) =    9.60      SUBAREA RUNOFF(CFS) =   12.13
 EFFECTIVE AREA(ACRES) =     28.29    AREA-AVERAGED Fm(INCH/HR) =  0.51
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
 TOTAL AREA(ACRES) =     28.29        PEAK FLOW RATE(CFS) =      35.83

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.50   HALFSTREET FLOOD WIDTH(FEET) =  17.12
 FLOW VELOCITY(FEET/SEC.) =  5.74   DEPTH*VELOCITY(FT*FT/SEC.) =   2.87
 LONGEST FLOWPATH FROM NODE  21200.00 TO NODE  21204.00 =  2052.29 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021204.0 TO NODE LR021205.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1638.00  DOWNSTREAM ELEVATION(FEET) = 1633.00
 STREET LENGTH(FEET) =   323.24   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.99

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      40.37
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.61
   HALFSTREET FLOOD WIDTH(FEET) =   22.57
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.82
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.33
 STREET FLOW TRAVEL TIME(MIN.) =   1.41   Tc(MIN.) =  15.43
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.807
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
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 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        6.52      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.27      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
 SUBAREA AREA(ACRES) =    7.79      SUBAREA RUNOFF(CFS) =    9.08
 EFFECTIVE AREA(ACRES) =     36.08    AREA-AVERAGED Fm(INCH/HR) =  0.51
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
 TOTAL AREA(ACRES) =     36.08        PEAK FLOW RATE(CFS) =      42.19

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.62   HALFSTREET FLOOD WIDTH(FEET) =  22.92
 FLOW VELOCITY(FEET/SEC.) =  3.87   DEPTH*VELOCITY(FT*FT/SEC.) =   2.39
 LONGEST FLOWPATH FROM NODE  21200.00 TO NODE  21205.00 =  2375.53 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021205.0 TO NODE LR021206.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1633.00  DOWNSTREAM ELEVATION(FEET) = 1629.00
 STREET LENGTH(FEET) =   199.37   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.92

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      45.21
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.61
   HALFSTREET FLOOD WIDTH(FEET) =   22.40
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.34
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.63
 STREET FLOW TRAVEL TIME(MIN.) =   0.77   Tc(MIN.) =  16.20
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.755
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.19      0.75      0.60    56
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        4.19      0.75      0.70    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
 SUBAREA AREA(ACRES) =    5.38      SUBAREA RUNOFF(CFS) =    6.04
 EFFECTIVE AREA(ACRES) =     41.46    AREA-AVERAGED Fm(INCH/HR) =  0.51
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  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     41.46        PEAK FLOW RATE(CFS) =      46.55

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.61   HALFSTREET FLOOD WIDTH(FEET) =  22.69
  FLOW VELOCITY(FEET/SEC.) =  4.36   DEPTH*VELOCITY(FT*FT/SEC.) =   2.67
  LONGEST FLOWPATH FROM NODE  21200.00 TO NODE  21206.00 =  2574.90 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021206.0 TO NODE LR021207.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1629.00  DOWNSTREAM ELEVATION(FEET) = 1610.00
  STREET LENGTH(FEET) =   607.72   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.83

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      49.88
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.59
    HALFSTREET FLOOD WIDTH(FEET) =   21.34
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.26
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.08
  STREET FLOW TRAVEL TIME(MIN.) =   1.93   Tc(MIN.) =  18.12
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.641
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.03      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.49      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    6.52      SUBAREA RUNOFF(CFS) =    6.66
  EFFECTIVE AREA(ACRES) =     47.98    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     47.98        PEAK FLOW RATE(CFS) =      48.94

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.58   HALFSTREET FLOOD WIDTH(FEET) =  21.17
```



```
  FLOW VELOCITY(FEET/SEC.) =  5.24   DEPTH*VELOCITY(FT*FT/SEC.) =   3.05
  LONGEST FLOWPATH FROM NODE  21200.00 TO NODE  21207.00 =  3182.62 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021207.0 TO NODE LR021208.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1610.00  DOWNSTREAM ELEVATION(FEET) = 1590.00
  STREET LENGTH(FEET) =   532.97   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.79

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      52.72
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.58
    HALFSTREET FLOOD WIDTH(FEET) =   21.05
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.71
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.30
  STREET FLOW TRAVEL TIME(MIN.) =   1.56   Tc(MIN.) =  19.68
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.562
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.92      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.09      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    8.01      SUBAREA RUNOFF(CFS) =    7.56
  EFFECTIVE AREA(ACRES) =     55.99    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     55.99        PEAK FLOW RATE(CFS) =      53.08

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.58   HALFSTREET FLOOD WIDTH(FEET) =  21.11
  FLOW VELOCITY(FEET/SEC.) =  5.71   DEPTH*VELOCITY(FT*FT/SEC.) =   3.32
  LONGEST FLOWPATH FROM NODE  21200.00 TO NODE  21208.00 =  3715.59 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021208.0 TO NODE LR021209.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
```

```
==========================================================================
  UPSTREAM ELEVATION(FEET) = 1590.00  DOWNSTREAM ELEVATION(FEET) = 1550.00
  STREET LENGTH(FEET) =   677.51   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.72

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      54.83
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.55
    HALFSTREET FLOOD WIDTH(FEET) =   19.53
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.85
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.76
  STREET FLOW TRAVEL TIME(MIN.) =   1.65   Tc(MIN.) =  21.33
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.488
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.99      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.98      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    3.97      SUBAREA RUNOFF(CFS) =    3.51
  EFFECTIVE AREA(ACRES) =     59.96    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     59.96        PEAK FLOW RATE(CFS) =      53.08
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.54   HALFSTREET FLOOD WIDTH(FEET) =  19.29
  FLOW VELOCITY(FEET/SEC.) =  6.79   DEPTH*VELOCITY(FT*FT/SEC.) =   3.69
  LONGEST FLOWPATH FROM NODE  21200.00 TO NODE  21209.00 =  4393.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021209.0 TO NODE LR021215.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1550.00  DOWNSTREAM(FEET) =  1520.00
  FLOW LENGTH(FEET) =   978.51   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   4.00   GIVEN BOX HEIGHT(FEET) =   2.00
  FLOWDEPTH IN BOX IS  0.96 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  13.87
  BOX-FLOW(CFS) =     53.08
  BOX-FLOW TRAVEL TIME(MIN.) =   1.18    Tc(MIN.) =  22.50
```



```
  LONGEST FLOWPATH FROM NODE  21200.00 TO NODE  21215.00 =  5371.61 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021215.0 TO NODE LR021215.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  22.50
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.441
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.58      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    5.58      SUBAREA RUNOFF(CFS) =    4.98
  EFFECTIVE AREA(ACRES) =     65.54   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.67
  TOTAL AREA(ACRES) =     65.54       PEAK FLOW RATE(CFS) =      55.32

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

****************************************************************************
  FLOW PROCESS FROM NODE LR021215.0 TO NODE LR021215.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021213.3 TO NODE LR021213.4 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   760.53
  ELEVATION DATA: UPSTREAM(FEET) =   1700.00  DOWNSTREAM(FEET) =   1690.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.918
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.922
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  SCHOOL                     B        8.73      0.75      0.60    56   13.92
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.08      0.75      0.60    56   13.92
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     13.01
  TOTAL AREA(ACRES) =      9.81   PEAK FLOW RATE(CFS) =     13.01

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

****************************************************************************
  FLOW PROCESS FROM NODE LR021213.4 TO NODE LR021213.5 IS CODE =  63
```

```
--------------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) = 1690.00  DOWNSTREAM ELEVATION(FEET) = 1640.00
  STREET LENGTH(FEET) =  1952.61   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      21.84
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.45
    HALFSTREET FLOOD WIDTH(FEET) =   16.24
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.96
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.79
  STREET FLOW TRAVEL TIME(MIN.) =   8.21   Tc(MIN.) =  22.13
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.455
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  SCHOOL                     B        3.65      0.75      0.60    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.28      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       12.18      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.66
  SUBAREA AREA(ACRES) =   20.11      SUBAREA RUNOFF(CFS) =   17.40
  EFFECTIVE AREA(ACRES) =     29.92    AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.64
  TOTAL AREA(ACRES) =     29.92        PEAK FLOW RATE(CFS) =      26.29

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.48   HALFSTREET FLOOD WIDTH(FEET) =  17.49
  FLOW VELOCITY(FEET/SEC.) =  4.14   DEPTH*VELOCITY(FT*FT/SEC.) =   1.97
  LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21213.50 =  2713.14 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021213.5 TO NODE LR021214.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) = 1640.00  DOWNSTREAM ELEVATION(FEET) = 1540.00
  STREET LENGTH(FEET) =  2138.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00
```



```
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.69

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      31.65
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.46
    HALFSTREET FLOOD WIDTH(FEET) =   16.71
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.44
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.50
  STREET FLOW TRAVEL TIME(MIN.) =   6.56   Tc(MIN.) =  28.69
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.246
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       14.39      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.85      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =   16.24      SUBAREA RUNOFF(CFS) =   10.68
  EFFECTIVE AREA(ACRES) =     46.16    AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.66
  TOTAL AREA(ACRES) =     46.16        PEAK FLOW RATE(CFS) =      31.31

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.46   HALFSTREET FLOOD WIDTH(FEET) =  16.63
  FLOW VELOCITY(FEET/SEC.) =  5.43   DEPTH*VELOCITY(FT*FT/SEC.) =   2.49
  LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21214.00 =  4851.64 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021214.0 TO NODE LR021214.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021210.0 TO NODE LR021211.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   788.20
  ELEVATION DATA: UPSTREAM(FEET) =   1650.00  DOWNSTREAM(FEET) =   1625.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.838
```

```
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.118
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 RESIDENTIAL
 "2 DWELLINGS/ACRE"          B        4.70      0.75       0.70    56   12.59
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"        B        0.64      0.75       0.60    56   11.84
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
 SUBAREA RUNOFF(CFS) =      7.71
 TOTAL AREA(ACRES) =      5.34   PEAK FLOW RATE(CFS) =      7.71

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

****************************************************************************
 FLOW PROCESS FROM NODE LR021211.0 TO NODE LR021212.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1625.00  DOWNSTREAM(FEET) =   1610.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   337.81   CHANNEL SLOPE =  0.0444
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   5.000
 MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
 CHANNEL FLOW THRU SUBAREA(CFS) =      7.71
 FLOW VELOCITY(FEET/SEC.) =   3.32   FLOW DEPTH(FEET) =   0.68
 TRAVEL TIME(MIN.) =   1.70   Tc(MIN.) =  13.54
 LONGEST FLOWPATH FROM NODE  21210.00 TO NODE  21212.00 =  1126.01 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021212.0 TO NODE LR021212.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  13.54
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.955
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"          B        7.68      0.75       0.70    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
 SUBAREA AREA(ACRES) =    7.68      SUBAREA RUNOFF(CFS) =    9.89
 EFFECTIVE AREA(ACRES) =     13.02   AREA-AVERAGED Fm(INCH/HR) =  0.52
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.70
 TOTAL AREA(ACRES) =     13.02       PEAK FLOW RATE(CFS) =      16.81

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

****************************************************************************
 FLOW PROCESS FROM NODE LR021212.0 TO NODE LR021213.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
```



```
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1610.00  DOWNSTREAM(FEET) =   1592.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   463.88   CHANNEL SLOPE =  0.0388
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  10.000
 MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
 CHANNEL FLOW THRU SUBAREA(CFS) =     16.81
 FLOW VELOCITY(FEET/SEC.) =   3.30   FLOW DEPTH(FEET) =   0.71
 TRAVEL TIME(MIN.) =   2.35   Tc(MIN.) =  15.88
 LONGEST FLOWPATH FROM NODE  21210.00 TO NODE  21213.00 =  1589.89 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021213.0 TO NODE LR021213.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  15.88
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.776
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"          B        5.46      0.75       0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"        B        0.60      0.75       0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
 SUBAREA AREA(ACRES) =    6.06      SUBAREA RUNOFF(CFS) =    6.87
 EFFECTIVE AREA(ACRES) =     19.08   AREA-AVERAGED Fm(INCH/HR) =  0.52
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
 TOTAL AREA(ACRES) =     19.08       PEAK FLOW RATE(CFS) =      21.59

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

****************************************************************************
 FLOW PROCESS FROM NODE LR021213.0 TO NODE LR021213.0 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  15.88
 RAINFALL INTENSITY(INCH/HR) =   1.78
 AREA-AVERAGED Fm(INCH/HR) =  0.52
 AREA-AVERAGED Fp(INCH/HR) =  0.75
 AREA-AVERAGED Ap =  0.69
 EFFECTIVE STREAM AREA(ACRES) =    19.08
 TOTAL STREAM AREA(ACRES) =    19.08
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     21.59

****************************************************************************
 FLOW PROCESS FROM NODE LR021213.1 TO NODE LR021213.2 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   686.22
 ELEVATION DATA: UPSTREAM(FEET) =   1642.00  DOWNSTREAM(FEET) =   1610.00
```

```
  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.369
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.294
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  PUBLIC PARK                 B        1.60      0.75      0.85    56   12.16
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        1.75      0.75      0.70    56   11.02
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.25      0.75      0.60    56   10.37
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.76
  SUBAREA RUNOFF(CFS) =      5.59
  TOTAL AREA(ACRES) =      3.60   PEAK FLOW RATE(CFS) =      5.59

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

****************************************************************************
  FLOW PROCESS FROM NODE LR021213.2 TO NODE LR021213.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1610.00  DOWNSTREAM ELEVATION(FEET) = 1592.00
  STREET LENGTH(FEET) =   944.44   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.08
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.36
    HALFSTREET FLOOD WIDTH(FEET) =   11.55
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.78
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.99
  STREET FLOW TRAVEL TIME(MIN.) =   5.66   Tc(MIN.) =  16.03
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.766
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                 B        0.14      0.75      0.85    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        4.29      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =     4.43      SUBAREA RUNOFF(CFS) =     4.94
  EFFECTIVE AREA(ACRES) =      8.03    AREA-AVERAGED Fm(INCH/HR) =  0.55
```



```
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =      8.03        PEAK FLOW RATE(CFS) =       8.82

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  11.95
  FLOW VELOCITY(FEET/SEC.) =  2.85   DEPTH*VELOCITY(FT*FT/SEC.) =   1.04
  LONGEST FLOWPATH FROM NODE  21213.10 TO NODE  21213.00 =  1630.66 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021213.0 TO NODE LR021213.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  16.03
  RAINFALL INTENSITY(INCH/HR) =   1.77
  AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.73
  EFFECTIVE STREAM AREA(ACRES) =     8.03
  TOTAL STREAM AREA(ACRES) =     8.03
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.82

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     21.59  15.88    1.776  0.75( 0.52) 0.69    19.1 LR021210.0
      2      8.82  16.03    1.766  0.75( 0.55) 0.73     8.0 LR021213.1

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     30.40  15.88    1.776  0.75( 0.53) 0.70    27.0 LR021210.0
      2     30.24  16.03    1.766  0.75( 0.53) 0.70    27.1 LR021213.1

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     30.40    Tc(MIN.) =    15.88
  EFFECTIVE AREA(ACRES) =    27.04   AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     27.11
  LONGEST FLOWPATH FROM NODE  21213.10 TO NODE  21213.00 =  1630.66 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021213.0 TO NODE LR021214.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1592.00  DOWNSTREAM(FEET) =   1540.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   580.67   CHANNEL SLOPE =  0.0896
```

```
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  10.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     30.40
  FLOW VELOCITY(FEET/SEC.) =   5.18   FLOW DEPTH(FEET) =   0.77
  TRAVEL TIME(MIN.) =   1.87   Tc(MIN.) =  17.75
  LONGEST FLOWPATH FROM NODE  21213.10 TO NODE  21214.00 =  2211.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021214.0 TO NODE LR021214.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.75
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.661
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        4.04      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.60      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    4.64      SUBAREA RUNOFF(CFS) =    4.79
  EFFECTIVE AREA(ACRES) =     31.68   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     31.75       PEAK FLOW RATE(CFS) =      32.40

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

****************************************************************************
  FLOW PROCESS FROM NODE LR021214.0 TO NODE LR021214.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     32.40  17.75    1.661  0.75( 0.52) 0.70    31.7 LR021210.0
      2     32.22  17.91    1.652  0.75( 0.52) 0.70    31.8 LR021213.1
  LONGEST FLOWPATH FROM NODE  21213.10 TO NODE  21214.00 =  2211.33 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     31.31  28.69    1.246  0.75( 0.49) 0.66    46.2 LR021213.3
  LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21214.00 =  4851.64 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     62.46  17.75    1.661  0.75( 0.51) 0.68    60.2 LR021210.0
      2     62.32  17.91    1.652  0.75( 0.51) 0.68    60.6 LR021213.1
      3     51.91  28.69    1.246  0.75( 0.51) 0.68    77.9 LR021213.3
    TOTAL AREA(ACRES) =     77.91
```



```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       62.46  Tc(MIN.) =   17.750
  EFFECTIVE AREA(ACRES) =     60.24  AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     77.91
  LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21214.00 =  4851.64 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021214.0 TO NODE LR021214.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021214.0 TO NODE LR021215.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1540.00  DOWNSTREAM ELEVATION(FEET) = 1520.00
  STREET LENGTH(FEET) =   601.35   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      67.02
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.59
    HALFSTREET FLOOD WIDTH(FEET) =   22.35
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.25
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.67
  STREET FLOW TRAVEL TIME(MIN.) =   1.60   Tc(MIN.) =  19.35
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.577
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.90      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        8.64      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =    9.54      SUBAREA RUNOFF(CFS) =    9.11
  EFFECTIVE AREA(ACRES) =     69.78    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     87.45        PEAK FLOW RATE(CFS) =      67.02

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44
```

```
  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.59   HALFSTREET FLOOD WIDTH(FEET) =  22.35
  FLOW VELOCITY(FEET/SEC.) =  6.25   DEPTH*VELOCITY(FT*FT/SEC.) =   3.67
  LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21215.00 =  5452.99 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021215.0 TO NODE LR021215.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1     67.02  19.35    1.577  0.75( 0.51) 0.68    69.8 LR021210.0
      2     66.86  19.51    1.570  0.75( 0.51) 0.68    70.1 LR021213.1
      3     54.82  30.40    1.203  0.75( 0.51) 0.68    87.5 LR021213.3
  LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21215.00 =  5452.99 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1     55.32  22.50    1.441  0.75( 0.50) 0.67    65.5 LR021200.0
  LONGEST FLOWPATH FROM NODE  21200.00 TO NODE  21215.00 =  5371.61 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    121.51  19.35    1.577  0.75( 0.51) 0.68   126.1 LR021210.0
      2    121.41  19.51    1.570  0.75( 0.51) 0.68   126.9 LR021213.1
      3    118.87  22.50    1.441  0.75( 0.51) 0.68   140.4 LR021200.0
      4     96.11  30.40    1.203  0.75( 0.51) 0.68   153.0 LR021213.3
    TOTAL AREA(ACRES) =    152.99

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      121.51  Tc(MIN.) =   19.353
  EFFECTIVE AREA(ACRES) =    126.14  AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    152.99
  LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21215.00 =  5452.99 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021215.0 TO NODE LR021215.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021215.0 TO NODE LR021216.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1520.00  DOWNSTREAM(FEET) =  1470.00
  FLOW LENGTH(FEET) =  1371.54   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   6.00   GIVEN BOX HEIGHT(FEET) =   3.00
  FLOWDEPTH IN BOX IS  1.13 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  17.86
```



```
  BOX-FLOW(CFS) =    121.51
  BOX-FLOW TRAVEL TIME(MIN.) =   1.28    Tc(MIN.) =  20.63
  LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21216.00 =  6824.53 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021216.0 TO NODE LR021216.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  20.63
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.518
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B       23.70      0.75       0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   23.70      SUBAREA RUNOFF(CFS) =   22.80
  EFFECTIVE AREA(ACRES) =    149.84   AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.67
  TOTAL AREA(ACRES) =    176.69       PEAK FLOW RATE(CFS) =     137.57

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    137.94  20.57    1.521  0.75( 0.50) 0.67   149.8 LR021210.0
      2    138.12  20.66    1.517  0.75( 0.50) 0.67   150.6 LR021213.1
      3    133.28  23.60    1.400  0.75( 0.50) 0.67   164.1 LR021200.0
      4    108.10  31.51    1.177  0.75( 0.50) 0.67   176.7 LR021213.3
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    138.12  Tc(MIN.) =  20.66
  AREA-AVERAGED Fm(INCH/HR) =  0.50  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.67  EFFECTIVE AREA(ACRES) =    150.62

****************************************************************************
  FLOW PROCESS FROM NODE LR021216.0 TO NODE LR021217.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1470.00  DOWNSTREAM(FEET) =  1415.00
  FLOW LENGTH(FEET) =  1351.25   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   7.00   GIVEN BOX HEIGHT(FEET) =   3.00
  FLOWDEPTH IN BOX IS  1.06 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  18.66
  BOX-FLOW(CFS) =    138.12
  BOX-FLOW TRAVEL TIME(MIN.) =   1.21    Tc(MIN.) =  21.87
  LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21217.00 =  8175.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021217.0 TO NODE LR021217.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.87
```

```
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.466
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       12.77      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =   12.77      SUBAREA RUNOFF(CFS) =   11.69
 EFFECTIVE AREA(ACRES) =    163.39   AREA-AVERAGED Fm(INCH/HR) =  0.49
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.66
 TOTAL AREA(ACRES) =    189.46       PEAK FLOW RATE(CFS) =     142.93

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    143.14  21.72    1.472  0.75( 0.49) 0.66   162.6 LR021210.0
     2    143.65  21.74    1.471  0.75( 0.49) 0.66   163.4 LR021213.1
     3    138.51  24.64    1.365  0.75( 0.49) 0.66   176.9 LR021200.0
     4    112.51  32.58    1.154  0.75( 0.49) 0.66   189.5 LR021213.3
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    143.65  Tc(MIN.) =  21.74
 AREA-AVERAGED Fm(INCH/HR) =  0.49  AREA-AVERAGED Fp(INCH/HR) =  0.75
 AREA-AVERAGED Ap =  0.66  EFFECTIVE AREA(ACRES) =    163.39

****************************************************************************
 FLOW PROCESS FROM NODE LR021217.0 TO NODE LR021236.0 IS CODE =  48
----------------------------------------------------------------------------
 >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1415.00  DOWNSTREAM(FEET) =  1358.00
 FLOW LENGTH(FEET) =  1911.29   MANNING'S N =  0.014
 GIVEN BOX BASEWIDTH(FEET) =   8.00   GIVEN BOX HEIGHT(FEET) =   3.00
 FLOWDEPTH IN BOX IS  1.09 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  16.50
 BOX-FLOW(CFS) =    143.65
 BOX-FLOW TRAVEL TIME(MIN.) =   1.93    Tc(MIN.) =  23.68
 LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21236.00 = 10087.07 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021236.0 TO NODE LR021236.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  23.68
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.398
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       19.73      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =   19.73      SUBAREA RUNOFF(CFS) =   16.85
 EFFECTIVE AREA(ACRES) =    183.12   AREA-AVERAGED Fm(INCH/HR) =  0.49
```



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 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.65
 TOTAL AREA(ACRES) =    209.19       PEAK FLOW RATE(CFS) =     149.74

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    150.87  23.48    1.405  0.75( 0.49) 0.65   183.1 LR021213.1
     2    149.87  23.54    1.402  0.75( 0.49) 0.65   182.3 LR021210.0
     3    145.48  26.31    1.312  0.75( 0.49) 0.65   196.6 LR021200.0
     4    118.49  34.28    1.119  0.75( 0.49) 0.65   209.2 LR021213.3
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    149.87  Tc(MIN.) =  23.54
 AREA-AVERAGED Fm(INCH/HR) =  0.49  AREA-AVERAGED Fp(INCH/HR) =  0.75
 AREA-AVERAGED Ap =  0.65  EFFECTIVE AREA(ACRES) =    182.34

****************************************************************************
 FLOW PROCESS FROM NODE LR021236.0 TO NODE LR021236.0 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE LR021220.0 TO NODE LR021221.0 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   765.06
 ELEVATION DATA: UPSTREAM(FEET) =   1620.00  DOWNSTREAM(FEET) =   1580.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.585
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.265
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 PUBLIC PARK                B        8.02      0.75      0.85    56   12.41
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        0.68      0.75      0.70    56   11.25
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.28      0.75      0.60    56   10.59
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.83
 SUBAREA RUNOFF(CFS) =     13.29
 TOTAL AREA(ACRES) =      8.98   PEAK FLOW RATE(CFS) =     13.29

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

****************************************************************************
 FLOW PROCESS FROM NODE LR021221.0 TO NODE LR021222.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
```

```
  ELEVATION DATA: UPSTREAM(FEET) =   1580.00  DOWNSTREAM(FEET) =   1515.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   731.02   CHANNEL SLOPE =  0.0889
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     13.29
  FLOW VELOCITY(FEET/SEC.) =   2.80   FLOW DEPTH(FEET) =   0.31
  TRAVEL TIME(MIN.) =   4.35   Tc(MIN.) =  14.94
  LONGEST FLOWPATH FROM NODE  21220.00 TO NODE  21222.00 =  1496.08 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021222.0 TO NODE LR021222.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  14.94
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.843
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.88      0.75      0.60    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        9.97      0.63      1.00    65
  PUBLIC PARK                B        3.94      0.75      0.85    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.50      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.90
  SUBAREA AREA(ACRES) =   17.29      SUBAREA RUNOFF(CFS) =   19.23
  EFFECTIVE AREA(ACRES) =     26.27   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.88
  TOTAL AREA(ACRES) =     26.27       PEAK FLOW RATE(CFS) =      29.10

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

****************************************************************************
  FLOW PROCESS FROM NODE LR021222.0 TO NODE LR021223.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1515.00  DOWNSTREAM ELEVATION(FEET) = 1500.00
  STREET LENGTH(FEET) =   477.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.79

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      35.77
    ***STREET FLOWING FULL***
```



```
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.50
    HALFSTREET FLOOD WIDTH(FEET) =   18.08
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.92
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.47
  STREET FLOW TRAVEL TIME(MIN.) =   1.62   Tc(MIN.) =  16.55
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.732
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       11.55      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   11.55      SUBAREA RUNOFF(CFS) =   13.34
  EFFECTIVE AREA(ACRES) =     37.82    AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =     37.82       PEAK FLOW RATE(CFS) =      39.84

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.51   HALFSTREET FLOOD WIDTH(FEET) =  18.75
  FLOW VELOCITY(FEET/SEC.) =  5.13   DEPTH*VELOCITY(FT*FT/SEC.) =   2.64
  LONGEST FLOWPATH FROM NODE  21220.00 TO NODE  21223.00 =  1973.58 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021223.0 TO NODE LR021224.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1500.00  DOWNSTREAM ELEVATION(FEET) = 1480.00
  STREET LENGTH(FEET) =   869.02   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      47.81
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.56
    HALFSTREET FLOOD WIDTH(FEET) =   21.13
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.95
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.78
  STREET FLOW TRAVEL TIME(MIN.) =   2.93   Tc(MIN.) =  19.48
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.571
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

```
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        8.47      0.75      0.60    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        8.69      0.63      1.00    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.80
  SUBAREA AREA(ACRES) =   17.16      SUBAREA RUNOFF(CFS) =   15.92
  EFFECTIVE AREA(ACRES) =     54.98    AREA-AVERAGED Fm(INCH/HR) =  0.56
  AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     54.98        PEAK FLOW RATE(CFS) =      50.27

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.57   HALFSTREET FLOOD WIDTH(FEET) =  21.49
  FLOW VELOCITY(FEET/SEC.) =  5.04   DEPTH*VELOCITY(FT*FT/SEC.) =   2.87
  LONGEST FLOWPATH FROM NODE  21220.00 TO NODE  21224.00 =  2842.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021224.0 TO NODE LR021225.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1480.00  DOWNSTREAM ELEVATION(FEET) = 1473.00
  STREET LENGTH(FEET) =   240.38   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.88

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      52.19
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.60
    HALFSTREET FLOOD WIDTH(FEET) =   22.04
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.17
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.10
  STREET FLOW TRAVEL TIME(MIN.) =   0.77   Tc(MIN.) =  20.25
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.535
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.82      0.75      0.60    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        0.13      0.63      1.00    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.61
  SUBAREA AREA(ACRES) =    3.95      SUBAREA RUNOFF(CFS) =    3.84
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  EFFECTIVE AREA(ACRES) =     58.93    AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.78
  TOTAL AREA(ACRES) =     58.93        PEAK FLOW RATE(CFS) =      52.31

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.60   HALFSTREET FLOOD WIDTH(FEET) =  22.04
  FLOW VELOCITY(FEET/SEC.) =  5.18   DEPTH*VELOCITY(FT*FT/SEC.) =   3.10
  LONGEST FLOWPATH FROM NODE  21220.00 TO NODE  21225.00 =  3082.98 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021225.0 TO NODE LR021233.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1473.00  DOWNSTREAM(FEET) =  1423.00
  FLOW LENGTH(FEET) =  1355.56   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   6.00   GIVEN BOX HEIGHT(FEET) =   1.50
  FLOWDEPTH IN BOX IS  0.65 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  13.39
  BOX-FLOW(CFS) =     52.31
  BOX-FLOW TRAVEL TIME(MIN.) =   1.69    Tc(MIN.) =  21.94
  LONGEST FLOWPATH FROM NODE  21220.00 TO NODE  21233.00 =  4438.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021233.0 TO NODE LR021233.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.94
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.463
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       16.86      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   16.86      SUBAREA RUNOFF(CFS) =   15.39
  EFFECTIVE AREA(ACRES) =     75.79   AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.74
  TOTAL AREA(ACRES) =     75.79       PEAK FLOW RATE(CFS) =      63.88

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

****************************************************************************
  FLOW PROCESS FROM NODE LR021233.0 TO NODE LR021233.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  21.94
  RAINFALL INTENSITY(INCH/HR) =   1.46
  AREA-AVERAGED Fm(INCH/HR) =  0.53
```

```
  AREA-AVERAGED Fp(INCH/HR) =  0.71
  AREA-AVERAGED Ap =  0.74
  EFFECTIVE STREAM AREA(ACRES) =    75.79
  TOTAL STREAM AREA(ACRES) =    75.79
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     63.88

****************************************************************************
  FLOW PROCESS FROM NODE LR021230.0 TO NODE LR021231.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   568.64
  ELEVATION DATA: UPSTREAM(FEET) =   1480.00  DOWNSTREAM(FEET) =   1450.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.384
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.435
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.58      0.75      0.60    56    9.38
  SCHOOL                     B        0.10      0.75      0.60    56    9.38
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =      8.37
  TOTAL AREA(ACRES) =      4.68   PEAK FLOW RATE(CFS) =      8.37

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

****************************************************************************
  FLOW PROCESS FROM NODE LR021231.0 TO NODE LR021232.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1450.00  DOWNSTREAM ELEVATION(FEET) = 1430.00
  STREET LENGTH(FEET) =   739.29   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.86

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      11.65
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.40
    HALFSTREET FLOOD WIDTH(FEET) =   12.08
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.53
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.41
```



```
  STREET FLOW TRAVEL TIME(MIN.) =   3.49   Tc(MIN.) =  12.87
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.015
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.65      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =     4.65      SUBAREA RUNOFF(CFS) =     6.55
  EFFECTIVE AREA(ACRES) =      9.33    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =      9.33        PEAK FLOW RATE(CFS) =      13.15

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.41   HALFSTREET FLOOD WIDTH(FEET) =  12.73
  FLOW VELOCITY(FEET/SEC.) =  3.63   DEPTH*VELOCITY(FT*FT/SEC.) =   1.50
  LONGEST FLOWPATH FROM NODE  21230.00 TO NODE  21232.00 =  1307.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021232.0 TO NODE LR021233.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1430.00  DOWNSTREAM ELEVATION(FEET) = 1423.00
  STREET LENGTH(FEET) =   666.66   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      18.58
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.52
    HALFSTREET FLOOD WIDTH(FEET) =   17.90
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.74
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.41
  STREET FLOW TRAVEL TIME(MIN.) =   4.06   Tc(MIN.) =  16.93
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.709
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        9.55      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =     9.55      SUBAREA RUNOFF(CFS) =   10.83
```

```
  EFFECTIVE AREA(ACRES) =     18.88    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     18.88        PEAK FLOW RATE(CFS) =      21.42

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.54   HALFSTREET FLOOD WIDTH(FEET) =  18.99
  FLOW VELOCITY(FEET/SEC.) =  2.82   DEPTH*VELOCITY(FT*FT/SEC.) =   1.52
  LONGEST FLOWPATH FROM NODE  21230.00 TO NODE  21233.00 =  1974.59 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021233.0 TO NODE LR021233.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  16.93
  RAINFALL INTENSITY(INCH/HR) =   1.71
  AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.60
  EFFECTIVE STREAM AREA(ACRES) =    18.88
  TOTAL STREAM AREA(ACRES) =    18.88
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     21.42

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     63.88  21.94    1.463  0.71( 0.53) 0.74    75.8 LR021220.0
      2     21.42  16.93    1.709  0.75( 0.45) 0.60    18.9 LR021230.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     83.67  16.93    1.709  0.72( 0.51) 0.71    77.4 LR021230.0
      2     81.12  21.94    1.463  0.72( 0.51) 0.71    94.7 LR021220.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     83.67    Tc(MIN.) =    16.93
  EFFECTIVE AREA(ACRES) =    77.36   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.71
  TOTAL AREA(ACRES) =     94.67
  LONGEST FLOWPATH FROM NODE  21220.00 TO NODE  21233.00 =  4438.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021233.0 TO NODE LR021234.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1423.00  DOWNSTREAM(FEET) =  1373.00
```



```
  FLOW LENGTH(FEET) =  1343.35   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =   8.00   GIVEN BOX HEIGHT(FEET) =   1.50
  FLOWDEPTH IN BOX IS  0.71 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  14.64
  BOX-FLOW(CFS) =     83.67
  BOX-FLOW TRAVEL TIME(MIN.) =   1.53    Tc(MIN.) =  18.46
  LONGEST FLOWPATH FROM NODE  21220.00 TO NODE  21234.00 =  5781.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021234.0 TO NODE LR021234.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  18.46
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.623
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       30.53      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   30.53      SUBAREA RUNOFF(CFS) =   32.26
  EFFECTIVE AREA(ACRES) =    107.89   AREA-AVERAGED Fm(INCH/HR) =  0.49
  AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =    125.20       PEAK FLOW RATE(CFS) =     109.91

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    110.33  18.38    1.627  0.72( 0.49) 0.68   107.9 LR021230.0
      2    103.01  23.33    1.410  0.72( 0.50) 0.69   125.2 LR021220.0
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    110.33  Tc(MIN.) =  18.38
  AREA-AVERAGED Fm(INCH/HR) =  0.49  AREA-AVERAGED Fp(INCH/HR) =  0.72
  AREA-AVERAGED Ap =  0.68  EFFECTIVE AREA(ACRES) =    107.89

****************************************************************************
  FLOW PROCESS FROM NODE LR021234.0 TO NODE LR021235.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1373.00  DOWNSTREAM(FEET) =  1359.00
  FLOW LENGTH(FEET) =   833.47   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  15.00   GIVEN BOX HEIGHT(FEET) =   1.50
  FLOWDEPTH IN BOX IS  0.71 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  10.32
  BOX-FLOW(CFS) =    110.33
  BOX-FLOW TRAVEL TIME(MIN.) =   1.35    Tc(MIN.) =  19.72
  LONGEST FLOWPATH FROM NODE  21220.00 TO NODE  21235.00 =  6615.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021235.0 TO NODE LR021235.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```

```
 MAINLINE Tc(MIN) =  19.72
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.560
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 MOBILE HOME PARK            B        8.16      0.75       0.25    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"        B        6.30      0.75       0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.40
 SUBAREA AREA(ACRES) =   14.46      SUBAREA RUNOFF(CFS) =   16.38
 EFFECTIVE AREA(ACRES) =    122.35   AREA-AVERAGED Fm(INCH/HR) =  0.47
 AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.64
 TOTAL AREA(ACRES) =    139.66       PEAK FLOW RATE(CFS) =     120.15

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    120.51  19.65    1.563  0.73( 0.47) 0.64   122.4 LR021230.0
     2    112.00  24.58    1.367  0.72( 0.48) 0.66   139.7 LR021220.0
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    120.51  Tc(MIN.) =  19.65
 AREA-AVERAGED Fm(INCH/HR) =  0.47  AREA-AVERAGED Fp(INCH/HR) =  0.73
 AREA-AVERAGED Ap =  0.64  EFFECTIVE AREA(ACRES) =    122.35

****************************************************************************
 FLOW PROCESS FROM NODE LR021235.0 TO NODE LR021236.0 IS CODE =  48
----------------------------------------------------------------------------
 >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1359.00  DOWNSTREAM(FEET) =  1358.00
 FLOW LENGTH(FEET) =   230.02   MANNING'S N =  0.014
 GIVEN BOX BASEWIDTH(FEET) =  31.00   GIVEN BOX HEIGHT(FEET) =   1.50
 FLOWDEPTH IN BOX IS  0.71 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =   5.44
 BOX-FLOW(CFS) =    120.51
 BOX-FLOW TRAVEL TIME(MIN.) =   0.70    Tc(MIN.) =  20.36
 LONGEST FLOWPATH FROM NODE  21220.00 TO NODE  21236.00 =  6845.38 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021236.0 TO NODE LR021236.0 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    120.51  20.33    1.532  0.73( 0.47) 0.64   122.4 LR021230.0
     2    112.00  25.24    1.345  0.72( 0.48) 0.66   139.7 LR021220.0
 LONGEST FLOWPATH FROM NODE  21220.00 TO NODE  21236.00 =  6845.38 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
```



```
     1    150.87  23.48    1.405  0.75( 0.49) 0.65   183.1 LR021213.1
     2    149.87  23.54    1.402  0.75( 0.49) 0.65   182.3 LR021210.0
     3    145.48  26.31    1.312  0.75( 0.49) 0.65   196.6 LR021200.0
     4    118.49  34.28    1.119  0.75( 0.49) 0.65   209.2 LR021213.3
 LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21236.00 = 10087.07 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    269.23  20.33    1.532  0.74( 0.48) 0.65   280.9 LR021230.0
     2    265.91  23.48    1.405  0.74( 0.48) 0.65   316.6 LR021213.1
     3    264.80  23.54    1.402  0.74( 0.48) 0.65   316.0 LR021210.0
     4    259.19  25.24    1.345  0.74( 0.48) 0.66   330.7 LR021220.0
     5    253.22  26.31    1.312  0.74( 0.48) 0.66   336.3 LR021200.0
     6    201.40  34.28    1.119  0.74( 0.48) 0.66   348.9 LR021213.3
  TOTAL AREA(ACRES) =    348.85

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      269.23  Tc(MIN.) =   20.327
 EFFECTIVE AREA(ACRES) =    280.87  AREA-AVERAGED Fm(INCH/HR) =  0.48
 AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.65
 TOTAL AREA(ACRES) =    348.85
 LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21236.00 = 10087.07 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021236.0 TO NODE LR021236.0 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE LR021236.0 TO NODE LR021246.0 IS CODE =  48
----------------------------------------------------------------------------
 >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1358.00  DOWNSTREAM(FEET) =  1311.00
 FLOW LENGTH(FEET) =  1973.53   MANNING'S N =  0.014
 GIVEN BOX BASEWIDTH(FEET) =   9.00   GIVEN BOX HEIGHT(FEET) =   4.00
 FLOWDEPTH IN BOX IS  1.62 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  18.44
 BOX-FLOW(CFS) =    269.23
 BOX-FLOW TRAVEL TIME(MIN.) =   1.78    Tc(MIN.) =  22.11
 LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21246.00 = 12060.60 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021246.0 TO NODE LR021246.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  22.11
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.456
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"        B       20.64      0.75       0.60    56
 COMMERCIAL                  B        3.79      0.75       0.10    56
 MOBILE HOME PARK            B       30.62      0.75       0.25    56
```

```
  PUBLIC PARK                B        2.31      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.39
  SUBAREA AREA(ACRES) =   57.36      SUBAREA RUNOFF(CFS) =   60.11
  EFFECTIVE AREA(ACRES) =    338.23   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.61
  TOTAL AREA(ACRES) =    406.21       PEAK FLOW RATE(CFS) =     306.84

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    307.96  22.02    1.460  0.74( 0.45) 0.61   338.2 LR021230.0
      2    301.60  25.07    1.351  0.74( 0.45) 0.61   373.4 LR021210.0
      3    301.79  25.09    1.350  0.74( 0.45) 0.61   374.0 LR021213.1
      4    295.24  26.69    1.301  0.74( 0.46) 0.62   388.1 LR021220.0
      5    289.09  27.70    1.272  0.74( 0.46) 0.62   393.6 LR021200.0
      6    232.19  35.71    1.092  0.74( 0.46) 0.62   406.2 LR021213.3
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    307.96  Tc(MIN.) =  22.02
  AREA-AVERAGED Fm(INCH/HR) =  0.45  AREA-AVERAGED Fp(INCH/HR) =  0.74
  AREA-AVERAGED Ap =  0.61  EFFECTIVE AREA(ACRES) =    338.23

****************************************************************************
  FLOW PROCESS FROM NODE LR021246.0 TO NODE LR021246.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  22.02
  RAINFALL INTENSITY(INCH/HR) =   1.46
  AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.74
  AREA-AVERAGED Ap =  0.61
  EFFECTIVE STREAM AREA(ACRES) =   338.23
  TOTAL STREAM AREA(ACRES) =   406.21
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    307.96

****************************************************************************
  FLOW PROCESS FROM NODE LR021240.0 TO NODE LR021241.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   726.27
  ELEVATION DATA: UPSTREAM(FEET) =   1550.00  DOWNSTREAM(FEET) =   1518.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.728
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.247
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        6.78      0.75      0.60    56   10.73
```



```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     10.97
  TOTAL AREA(ACRES) =      6.78   PEAK FLOW RATE(CFS) =     10.97

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

****************************************************************************
  FLOW PROCESS FROM NODE LR021241.0 TO NODE LR021242.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1518.00  DOWNSTREAM ELEVATION(FEET) = 1465.00
  STREET LENGTH(FEET) =  1349.95   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.78

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      19.39
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.44
    HALFSTREET FLOOD WIDTH(FEET) =   13.90
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.57
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.99
  STREET FLOW TRAVEL TIME(MIN.) =   4.93   Tc(MIN.) =  15.65
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.791
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       13.82      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   13.82      SUBAREA RUNOFF(CFS) =   16.70
  EFFECTIVE AREA(ACRES) =     20.60    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     20.60        PEAK FLOW RATE(CFS) =      24.89

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.47   HALFSTREET FLOOD WIDTH(FEET) =  15.42
  FLOW VELOCITY(FEET/SEC.) =  4.85   DEPTH*VELOCITY(FT*FT/SEC.) =   2.26
  LONGEST FLOWPATH FROM NODE  21240.00 TO NODE  21242.00 =  2076.22 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021242.0 TO NODE LR021243.0 IS CODE =  63
```

```
------------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
==============================================================================
  UPSTREAM ELEVATION(FEET) = 1465.00  DOWNSTREAM ELEVATION(FEET) = 1420.00
  STREET LENGTH(FEET) =  1314.48   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.81

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      32.22
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.51
    HALFSTREET FLOOD WIDTH(FEET) =   17.59
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.90
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.50
  STREET FLOW TRAVEL TIME(MIN.) =   4.47   Tc(MIN.) =  20.12
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.541
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       14.61      0.75      0.60    56
  COMMERCIAL                 B        0.19      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.59
  SUBAREA AREA(ACRES) =   14.80      SUBAREA RUNOFF(CFS) =   14.61
  EFFECTIVE AREA(ACRES) =     35.40    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     35.40        PEAK FLOW RATE(CFS) =      34.86

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.52   HALFSTREET FLOOD WIDTH(FEET) =  18.18
  FLOW VELOCITY(FEET/SEC.) =  4.99   DEPTH*VELOCITY(FT*FT/SEC.) =   2.60
  LONGEST FLOWPATH FROM NODE  21240.00 TO NODE  21243.00 =  3390.70 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021243.0 TO NODE LR021244.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
==============================================================================
  UPSTREAM ELEVATION(FEET) = 1420.00  DOWNSTREAM ELEVATION(FEET) = 1372.00
  STREET LENGTH(FEET) =  1306.02   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
```



```
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.79

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      40.98
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.54
    HALFSTREET FLOOD WIDTH(FEET) =   19.12
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.33
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.88
  STREET FLOW TRAVEL TIME(MIN.) =   4.08   Tc(MIN.) =  24.20
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.379
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       14.60      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   14.60      SUBAREA RUNOFF(CFS) =   12.23
  EFFECTIVE AREA(ACRES) =     50.00    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     50.00        PEAK FLOW RATE(CFS) =      41.94

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.54   HALFSTREET FLOOD WIDTH(FEET) =  19.29
  FLOW VELOCITY(FEET/SEC.) =  5.36   DEPTH*VELOCITY(FT*FT/SEC.) =   2.92
  LONGEST FLOWPATH FROM NODE  21240.00 TO NODE  21244.00 =  4696.72 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021244.0 TO NODE LR021245.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
==============================================================================
  UPSTREAM ELEVATION(FEET) = 1372.00  DOWNSTREAM ELEVATION(FEET) = 1330.00
  STREET LENGTH(FEET) =  1339.26   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.83

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      48.06
```

```
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.58
  HALFSTREET FLOOD WIDTH(FEET) =   21.05
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.20
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.01
 STREET FLOW TRAVEL TIME(MIN.) =   4.29   Tc(MIN.) =  28.49
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.251
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       11.63      0.75      0.60    56
 SCHOOL                     B        5.33      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =   16.96      SUBAREA RUNOFF(CFS) =   12.24
 EFFECTIVE AREA(ACRES) =     66.96    AREA-AVERAGED Fm(INCH/HR) =  0.45
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
 TOTAL AREA(ACRES) =     66.96        PEAK FLOW RATE(CFS) =      48.38

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.58   HALFSTREET FLOOD WIDTH(FEET) =  21.11
 FLOW VELOCITY(FEET/SEC.) =  5.21   DEPTH*VELOCITY(FT*FT/SEC.) =   3.02
 LONGEST FLOWPATH FROM NODE  21240.00 TO NODE  21245.00 =  6035.98 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021245.0 TO NODE LR021246.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1330.00  DOWNSTREAM ELEVATION(FEET) = 1311.00
 STREET LENGTH(FEET) =   939.73   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.92

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      51.31
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.63
   HALFSTREET FLOOD WIDTH(FEET) =   23.51
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.49
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.82
 STREET FLOW TRAVEL TIME(MIN.) =   3.49   Tc(MIN.) =  31.98
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.167
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```



```
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        2.70      0.75      0.60    56
 MOBILE HOME PARK           B        4.66      0.75      0.25    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.38
 SUBAREA AREA(ACRES) =    7.36      SUBAREA RUNOFF(CFS) =    5.85
 EFFECTIVE AREA(ACRES) =     74.32    AREA-AVERAGED Fm(INCH/HR) =  0.43
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.58
 TOTAL AREA(ACRES) =     74.32        PEAK FLOW RATE(CFS) =      49.19

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.62   HALFSTREET FLOOD WIDTH(FEET) =  23.10
 FLOW VELOCITY(FEET/SEC.) =  4.45   DEPTH*VELOCITY(FT*FT/SEC.) =   2.76
 LONGEST FLOWPATH FROM NODE  21240.00 TO NODE  21246.00 =  6975.71 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021246.0 TO NODE LR021246.0 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  31.98
 RAINFALL INTENSITY(INCH/HR) =   1.17
 AREA-AVERAGED Fm(INCH/HR) =  0.43
 AREA-AVERAGED Fp(INCH/HR) =  0.75
 AREA-AVERAGED Ap =  0.58
 EFFECTIVE STREAM AREA(ACRES) =    74.32
 TOTAL STREAM AREA(ACRES) =    74.32
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     49.19

 ** CONFLUENCE DATA **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    307.96  22.02    1.460  0.74( 0.45) 0.61   338.2 LR021230.0
     1    301.60  25.07    1.351  0.74( 0.45) 0.61   373.4 LR021210.0
     1    301.79  25.09    1.350  0.74( 0.45) 0.61   374.0 LR021213.1
     1    295.24  26.69    1.301  0.74( 0.46) 0.62   388.1 LR021220.0
     1    289.09  27.70    1.272  0.74( 0.46) 0.62   393.6 LR021200.0
     1    232.19  35.71    1.092  0.74( 0.46) 0.62   406.2 LR021213.3
     2     49.19  31.98    1.167  0.75( 0.43) 0.58    74.3 LR021240.0

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
  NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
     1    355.31  22.02    1.460  0.74( 0.45) 0.60   389.4 LR021230.0
     2    349.79  25.07    1.351  0.74( 0.45) 0.61   431.6 LR021210.0
     3    349.98  25.09    1.350  0.74( 0.45) 0.61   432.3 LR021213.1
     4    343.76  26.69    1.301  0.74( 0.45) 0.61   450.1 LR021220.0
     5    337.79  27.70    1.272  0.74( 0.45) 0.61   458.0 LR021200.0
```

```
      6    307.87  31.98    1.167  0.74( 0.45) 0.61   474.7 LR021240.0
      7    276.39  35.71    1.092  0.74( 0.45) 0.61   480.5 LR021213.3

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    355.31    Tc(MIN.) =    22.02
  EFFECTIVE AREA(ACRES) =   389.39   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =    480.53
  LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21246.00 = 12060.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021246.0 TO NODE LR021247.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1311.00  DOWNSTREAM(FEET) =  1290.00
  FLOW LENGTH(FEET) =  1258.84   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  12.00   GIVEN BOX HEIGHT(FEET) =   4.00
  FLOWDEPTH IN BOX IS  1.76 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  16.83
  BOX-FLOW(CFS) =    355.31
  BOX-FLOW TRAVEL TIME(MIN.) =   1.25    Tc(MIN.) =  23.27
  LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21247.00 = 13319.44 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021247.0 TO NODE LR021247.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  23.27
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.412
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       23.54      0.75      0.60    56
  COMMERCIAL                 B        1.26      0.75      0.10    56
  MOBILE HOME PARK           B        0.22      0.75      0.25    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        1.80      0.63      1.00    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.73
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   26.82      SUBAREA RUNOFF(CFS) =   23.44
  EFFECTIVE AREA(ACRES) =    416.21   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =    507.35       PEAK FLOW RATE(CFS) =     362.12

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)        (ACRES)    NODE
      1    363.01  23.20    1.415  0.74( 0.45) 0.60   416.2 LR021230.0
      2    358.13  26.16    1.316  0.74( 0.45) 0.61   459.1 LR021213.1
      3    357.22  26.20    1.315  0.74( 0.45) 0.61   458.5 LR021210.0
      4    352.09  27.71    1.272  0.74( 0.45) 0.61   476.9 LR021220.0
      5    346.44  28.68    1.246  0.74( 0.45) 0.61   484.8 LR021200.0
```



```
      6    313.46  32.94    1.146  0.74( 0.45) 0.61   501.5 LR021240.0
      7    284.37  36.66    1.075  0.74( 0.45) 0.61   507.4 LR021213.3
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    363.01  Tc(MIN.) =  23.20
  AREA-AVERAGED Fm(INCH/HR) =  0.45  AREA-AVERAGED Fp(INCH/HR) =  0.74
  AREA-AVERAGED Ap =  0.60  EFFECTIVE AREA(ACRES) =    416.21

****************************************************************************
  FLOW PROCESS FROM NODE LR021247.0 TO NODE LR021247.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021167.0 TO NODE LR021167.0 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 21167.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      527.04    Tc(MIN.) =  33.09
  AREA-AVERAGED Fm(INCH/HR) =  0.49    Ybar = 0.61
  TOTAL AREA(ACRES) =     741.39
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21167.00 = 13765.49 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021167.0 TO NODE LR021167.0 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      527.04    Tc(MIN.) =  33.09
  AREA-AVERAGED Fm(INCH/HR) =  0.49    Ybar = 0.61
  TOTAL AREA(ACRES) =     741.39
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21167.00 = 13765.49 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021167.0 TO NODE LR021167.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021167.0 TO NODE LR021247.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1320.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1290.00
  FLOW LENGTH(FEET) =  1357.45   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  90.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  90.0 INCH PIPE IS  43.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  25.32
  PIPE-FLOW(CFS) =    527.04
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
```

```
  PIPEFLOW TRAVEL TIME(MIN.) =   0.89    Tc(MIN.) =  33.98
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21247.00 = 15122.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021247.0 TO NODE LR021247.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  33.98
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.125
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK          B        0.01      0.75      0.25    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"      B        7.68      0.75      0.60    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                B        2.53      0.63      1.00    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.71
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.70
  SUBAREA AREA(ACRES) =   10.22
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.32;6H= 1.81;24H= 3.44
  S-GRAPH: VALLEY(DEV.)= 92.2%;VALLEY(UNDEV.)/DESERT=  7.8%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.57; LAG(HR) = 0.45; Fm(INCH/HR) = 0.49; Ybar = 0.61
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =    751.61
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21247.00 = 15122.94 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0368; Lca/L=0.4,n=.0330; Lca/L=0.5,n=.0303;Lca/L=0.6,n=.0283
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =      92.57
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    523.96
  TOTAL AREA(ACRES) =    751.61       PEAK FLOW RATE(CFS) =     527.04
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

****************************************************************************
  FLOW PROCESS FROM NODE LR021247.0 TO NODE LR021247.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =      527.04    Tc(MIN.) =  33.98
  AREA-AVERAGED Fm(INCH/HR) =  0.49    Ybar = 0.61
  TOTAL AREA(ACRES) =     751.61
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21247.00 = 15122.94 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    363.01  23.20    1.415  0.74( 0.45) 0.60   416.2 LR021230.0
      2    358.13  26.16    1.316  0.74( 0.45) 0.61   459.1 LR021213.1
```



```
      3    357.22  26.20    1.315  0.74( 0.45) 0.61   458.5 LR021210.0
      4    352.09  27.71    1.272  0.74( 0.45) 0.61   476.9 LR021220.0
      5    346.44  28.68    1.246  0.74( 0.45) 0.61   484.8 LR021200.0
      6    313.46  32.94    1.146  0.74( 0.45) 0.61   501.5 LR021240.0
      7    284.37  36.66    1.075  0.74( 0.45) 0.61   507.4 LR021213.3
  LONGEST FLOWPATH FROM NODE  21213.30 TO NODE  21247.00 = 13319.44 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.32;6H= 1.81;24H= 3.44
  S-GRAPH: VALLEY(DEV.)= 93.7%;VALLEY(UNDEV.)/DESERT=  6.3%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.57; LAG(HR) = 0.45; Fm(INCH/HR) = 0.48; Ybar = 0.60
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.94; 30M = 0.94; 1HR = 0.94;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1258.96
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21247.00 = 15122.94 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0368; Lca/L=0.4,n=.0330; Lca/L=0.5,n=.0303;Lca/L=0.6,n=.0283
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     160.24
  PEAK FLOW RATE(CFS) =     869.36

****************************************************************************
  FLOW PROCESS FROM NODE LR021247.0 TO NODE LR021247.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021247.0 TO NODE LR021248.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1290.00  DOWNSTREAM(FEET) =   1280.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   452.82   CHANNEL SLOPE =  0.0221
  CHANNEL BASE(FEET) =    9.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   4.50
  CHANNEL FLOW THRU SUBAREA(CFS) =    869.36
  FLOW VELOCITY(FEET/SEC.) =  22.21   FLOW DEPTH(FEET) =   2.71
  TRAVEL TIME(MIN.) =   0.34   Tc(MIN.) =  34.32
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21248.00 = 15575.76 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021248.0 TO NODE LR021248.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  34.32
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.118
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK          B       37.17      0.75      0.25    56
  COMMERCIAL                B       10.19      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"      B       34.08      0.75      0.60    56
```

```
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.38
   SUBAREA AREA(ACRES) =   81.44
   UNIT-HYDROGRAPH DATA:
   RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.32;6H= 1.81;24H= 3.44
   S-GRAPH: VALLEY(DEV.)= 94.1%;VALLEY(UNDEV.)/DESERT=  5.9%
            MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
   Tc(HR) = 0.57; LAG(HR) = 0.46; Fm(INCH/HR) = 0.46; Ybar = 0.58
   USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
   DEPTH-AREA FACTORS: 5M = 0.94; 30M = 0.94; 1HR = 0.94;
   3HR = 0.99; 6HR = 1.00; 24HR= 1.00
   UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1340.40
   LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21248.00 = 15575.76 FEET.
    EQUIVALENT BASIN FACTOR APPROXIMATIONS:
    Lca/L=0.3,n=.0362; Lca/L=0.4,n=.0325; Lca/L=0.5,n=.0298;Lca/L=0.6,n=.0278
   TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     175.16
   UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    925.67
   TOTAL AREA(ACRES) =   1340.40       PEAK FLOW RATE(CFS) =     925.67

   SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
   5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.32; 6HR = 1.81; 24HR = 3.44

 ****************************************************************************
   FLOW PROCESS FROM NODE LR021248.0 TO NODE LR021248.0 IS CODE = 152
 ----------------------------------------------------------------------------
   >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
 ============================================================================
   PEAK FLOWRATE TABLE FILE NAME: 21248.dna
 ============================================================================
   END OF STUDY SUMMARY:
   TOTAL AREA(ACRES)     =   1340.40  TC(MIN.) =     34.32
   AREA-AVERAGED Fm(INCH/HR)=  0.46   Ybar =  0.58
   PEAK FLOW RATE(CFS)   =    925.67
 ============================================================================
 ============================================================================
   END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                          San Bernardino County
                    Transportation/ Flood Control Department

                          Water Resources Division

  ************************ DESCRIPTION OF STUDY *************************
 * LR0213ZZ                                                             *
 * 10- Year Storm                                                       *
 *                                                                      *
  ************************************************************************

   FILE NAME: LR0213ZZ.Z10
   TIME/DATE OF STUDY: 09:58 02/22/2006
 ========================================================================
   USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
 ========================================================================
                     --*TIME-OF-CONCENTRATION MODEL*--

   USER SPECIFIED STORM EVENT(YEAR) =   10.00
   SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
   SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
   *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

   SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
   USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 0.8000

   *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

   *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
      HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
      WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
 NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
 ===  =====  =========  =================  ======  ===== ====== ===== =======
   1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
   2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
   3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
   4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
   5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
   6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
   7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
   8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
   9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
```



```
  17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180

   GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
     1. Relative Flow-Depth =  0.20 FEET
        as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
     2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
    *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
     OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
    *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

   UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
     WATERSHED LAG = 0.80 * Tc
     USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
     1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
     FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
     PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
     SIERRA MADRE DEPTH-AREA FACTORS USED.
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


 ************************************************************************
   FLOW PROCESS FROM NODE LR021300.0 TO NODE LR021301.0 IS CODE =  21
 ------------------------------------------------------------------------
   >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
   >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
 ========================================================================
   INITIAL SUBAREA FLOW-LENGTH(FEET) =   702.11
   ELEVATION DATA: UPSTREAM(FEET) =   1665.00  DOWNSTREAM(FEET) =   1630.00

   Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
   SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.326
   *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.299
   SUBAREA Tc AND LOSS RATE DATA(AMC  II):
    DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
   RESIDENTIAL
   "2 DWELLINGS/ACRE"         B        3.89      0.75      0.70    56   10.98
   RESIDENTIAL
   "3-4 DWELLINGS/ACRE"       B        1.29      0.75      0.60    56   10.33
   SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
   SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
   SUBAREA RUNOFF(CFS) =      8.37
   TOTAL AREA(ACRES) =      5.18   PEAK FLOW RATE(CFS) =      8.37

   SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
   5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

 ************************************************************************
   FLOW PROCESS FROM NODE LR021301.0 TO NODE LR021302.0 IS CODE =  63
 ------------------------------------------------------------------------
   >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
   >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
 ========================================================================
   UPSTREAM ELEVATION(FEET) = 1630.00  DOWNSTREAM ELEVATION(FEET) = 1627.00
   STREET LENGTH(FEET) =   166.02   CURB HEIGHT(INCHES) =  6.0
   STREET HALFWIDTH(FEET) = 18.00
```

```
 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.13
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.38
   HALFSTREET FLOOD WIDTH(FEET) =   12.80
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.88
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.10
 STREET FLOW TRAVEL TIME(MIN.) =   0.96   Tc(MIN.) =  11.29
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.180
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        2.06      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.29      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
 SUBAREA AREA(ACRES) =    2.35      SUBAREA RUNOFF(CFS) =    3.52
 EFFECTIVE AREA(ACRES) =      7.53    AREA-AVERAGED Fm(INCH/HR) =  0.51
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
 TOTAL AREA(ACRES) =      7.53        PEAK FLOW RATE(CFS) =      11.33

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.39   HALFSTREET FLOOD WIDTH(FEET) =  13.35
 FLOW VELOCITY(FEET/SEC.) =  2.98   DEPTH*VELOCITY(FT*FT/SEC.) =   1.17
 LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21302.00 =   868.13 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021302.0 TO NODE LR021303.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1627.00  DOWNSTREAM ELEVATION(FEET) = 1623.00
 STREET LENGTH(FEET) =   202.20   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
```



```
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      12.93
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.40
   HALFSTREET FLOOD WIDTH(FEET) =   13.90
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.15
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.28
 STREET FLOW TRAVEL TIME(MIN.) =   1.07   Tc(MIN.) =  12.35
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.065
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        1.93      0.75      0.70    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.36      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
 SUBAREA AREA(ACRES) =    2.29      SUBAREA RUNOFF(CFS) =    3.20
 EFFECTIVE AREA(ACRES) =      9.82    AREA-AVERAGED Fm(INCH/HR) =  0.51
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
 TOTAL AREA(ACRES) =      9.82        PEAK FLOW RATE(CFS) =      13.75

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.41   HALFSTREET FLOOD WIDTH(FEET) =  14.21
 FLOW VELOCITY(FEET/SEC.) =  3.22   DEPTH*VELOCITY(FT*FT/SEC.) =   1.32
 LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21303.00 =  1070.33 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021303.0 TO NODE LR021304.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1623.00  DOWNSTREAM ELEVATION(FEET) = 1600.00
 STREET LENGTH(FEET) =   190.38   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.56

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      15.00
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.33
   HALFSTREET FLOOD WIDTH(FEET) =   10.15
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.53
```

```
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.15
  STREET FLOW TRAVEL TIME(MIN.) =   0.49   Tc(MIN.) =  12.84
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.018
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.38      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.45      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    1.83      SUBAREA RUNOFF(CFS) =    2.49
  EFFECTIVE AREA(ACRES) =     11.65    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     11.65        PEAK FLOW RATE(CFS) =      15.83

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =  10.38
  FLOW VELOCITY(FEET/SEC.) =  6.62   DEPTH*VELOCITY(FT*FT/SEC.) =   2.21
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21304.00 =  1260.71 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021304.0 TO NODE LR021305.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1600.00  DOWNSTREAM ELEVATION(FEET) = 1580.00
  STREET LENGTH(FEET) =   267.45   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.63

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      18.67
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.37
    HALFSTREET FLOOD WIDTH(FEET) =   12.26
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.76
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.14
  STREET FLOW TRAVEL TIME(MIN.) =   0.77   Tc(MIN.) =  13.61
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.948
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.80      0.75      0.60    56
```



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  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        3.59      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    4.39      SUBAREA RUNOFF(CFS) =    5.68
  EFFECTIVE AREA(ACRES) =     16.04    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     16.04        PEAK FLOW RATE(CFS) =      20.78

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.38   HALFSTREET FLOOD WIDTH(FEET) =  12.80
  FLOW VELOCITY(FEET/SEC.) =  5.91   DEPTH*VELOCITY(FT*FT/SEC.) =   2.26
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21305.00 =  1528.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021305.0 TO NODE LR021306.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1580.00  DOWNSTREAM ELEVATION(FEET) = 1555.00
  STREET LENGTH(FEET) =   439.49   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.67

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      27.56
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.43
    HALFSTREET FLOOD WIDTH(FEET) =   15.23
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.66
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.44
  STREET FLOW TRAVEL TIME(MIN.) =   1.30   Tc(MIN.) =  14.91
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.845
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        8.99      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.29      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =   11.28      SUBAREA RUNOFF(CFS) =   13.56
  EFFECTIVE AREA(ACRES) =     27.32    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     27.32        PEAK FLOW RATE(CFS) =      32.85
```

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  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.45   HALFSTREET FLOOD WIDTH(FEET) =  16.32
  FLOW VELOCITY(FEET/SEC.) =  5.90   DEPTH*VELOCITY(FT*FT/SEC.) =   2.67
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21306.00 =  1967.65 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021306.0 TO NODE LR021307.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1555.00  DOWNSTREAM ELEVATION(FEET) = 1530.00
  STREET LENGTH(FEET) =   430.58   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.67

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      41.34
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.48
    HALFSTREET FLOOD WIDTH(FEET) =   17.73
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.34
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.05
  STREET FLOW TRAVEL TIME(MIN.) =   1.13   Tc(MIN.) =  16.04
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.765
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.82      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       11.14      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
  SUBAREA AREA(ACRES) =   14.96      SUBAREA RUNOFF(CFS) =   16.98
  EFFECTIVE AREA(ACRES) =     42.28    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     42.28        PEAK FLOW RATE(CFS) =      47.88

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.50   HALFSTREET FLOOD WIDTH(FEET) =  18.00
  FLOW VELOCITY(FEET/SEC.) =  6.67   DEPTH*VELOCITY(FT*FT/SEC.) =   3.33
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21307.00 =  2398.23 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR021307.0 TO NODE LR021308.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1530.00  DOWNSTREAM ELEVATION(FEET) = 1520.00
  STREET LENGTH(FEET) =   417.62   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.86

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      53.34
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.58
    HALFSTREET FLOOD WIDTH(FEET) =   21.80
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.21
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.00
  STREET FLOW TRAVEL TIME(MIN.) =   1.34   Tc(MIN.) =  17.38
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.683
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.69      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.54      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.66
  SUBAREA AREA(ACRES) =   10.23      SUBAREA RUNOFF(CFS) =   10.92
  EFFECTIVE AREA(ACRES) =     52.51    AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.68
  TOTAL AREA(ACRES) =     52.51        PEAK FLOW RATE(CFS) =      55.65

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.58   HALFSTREET FLOOD WIDTH(FEET) =  22.16
  FLOW VELOCITY(FEET/SEC.) =  5.27   DEPTH*VELOCITY(FT*FT/SEC.) =   3.07
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21308.00 =  2815.85 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021308.0 TO NODE LR021309.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
```

```
  UPSTREAM NODE ELEVATION(FEET) =  1520.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1445.00
  FLOW LENGTH(FEET) =  2140.63   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  16.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.16
  PIPE-FLOW(CFS) =     55.65
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   2.08    Tc(MIN.) =  19.46
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21309.00 =  4956.48 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021309.0 TO NODE LR021309.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  19.46
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.572
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       52.35      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   52.35      SUBAREA RUNOFF(CFS) =   52.93
  EFFECTIVE AREA(ACRES) =    104.86   AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.64
  TOTAL AREA(ACRES) =    104.86       PEAK FLOW RATE(CFS) =     103.37

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

****************************************************************************
  FLOW PROCESS FROM NODE LR021309.0 TO NODE LR021310.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1445.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1415.00
  FLOW LENGTH(FEET) =   762.02   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  20.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.92
  PIPE-FLOW(CFS) =    103.37
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.61    Tc(MIN.) =  20.06
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21310.00 =  5718.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021310.0 TO NODE LR021310.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  20.06
```



```
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.544
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       18.20      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   18.20      SUBAREA RUNOFF(CFS) =   17.93
  EFFECTIVE AREA(ACRES) =    123.06   AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.63
  TOTAL AREA(ACRES) =    123.06       PEAK FLOW RATE(CFS) =     118.59

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

****************************************************************************
  FLOW PROCESS FROM NODE LR021310.0 TO NODE LR021311.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1415.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1356.00
  FLOW LENGTH(FEET) =  1371.34   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  21.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  22.39
  PIPE-FLOW(CFS) =    118.59
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.02    Tc(MIN.) =  21.08
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21311.00 =  7089.84 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021311.0 TO NODE LR021311.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.08
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.498
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       19.39      0.75      0.60    56
  SCHOOL                     B       10.62      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   30.01      SUBAREA RUNOFF(CFS) =   28.35
  EFFECTIVE AREA(ACRES) =    153.07   AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.63
  TOTAL AREA(ACRES) =    153.07       PEAK FLOW RATE(CFS) =     141.92

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

****************************************************************************
```

```
 FLOW PROCESS FROM NODE LR021311.0 TO NODE LR021312.0 IS CODE =  42
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1356.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1310.00
 FLOW LENGTH(FEET) =  1393.37   MANNING'S N =  0.013

 USER SPECIFIED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
 DEPTH OF FLOW IN  51.0 INCH PIPE IS  24.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  21.21
 PIPE-FLOW(CFS) =    141.92
 *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
 PIPEFLOW TRAVEL TIME(MIN.) =   1.10    Tc(MIN.) =  22.18
 LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21312.00 =  8483.21 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021312.0 TO NODE LR021312.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  22.18
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.453
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       77.43      0.75      0.60    56
 SCHOOL                     B        5.45      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =   82.88      SUBAREA RUNOFF(CFS) =   74.94
 EFFECTIVE AREA(ACRES) =    235.95   AREA-AVERAGED Fm(INCH/HR) =  0.46
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.62
 TOTAL AREA(ACRES) =    235.95       PEAK FLOW RATE(CFS) =     210.69

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

****************************************************************************
 FLOW PROCESS FROM NODE LR021312.0 TO NODE LR021313.0 IS CODE =  42
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =  1310.00
 DOWNSTREAM NODE ELEVATION(FEET) =  1285.00
 FLOW LENGTH(FEET) =   759.92   MANNING'S N =  0.013

 USER SPECIFIED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
 DEPTH OF FLOW IN  60.0 INCH PIPE IS  28.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  23.37
 PIPE-FLOW(CFS) =    210.69
 *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
 PIPEFLOW TRAVEL TIME(MIN.) =   0.54    Tc(MIN.) =  22.72
 LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21313.00 =  9243.13 FEET.
```



```
****************************************************************************
 FLOW PROCESS FROM NODE LR021313.0 TO NODE LR021313.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  22.72
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.433
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       10.40      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
 SUBAREA AREA(ACRES) =   10.40      SUBAREA RUNOFF(CFS) =    9.21
 EFFECTIVE AREA(ACRES) =    246.35   AREA-AVERAGED Fm(INCH/HR) =  0.46
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.62
 TOTAL AREA(ACRES) =    246.35       PEAK FLOW RATE(CFS) =     215.46

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

****************************************************************************
 FLOW PROCESS FROM NODE LR021313.0 TO NODE LR021360.0 IS CODE =  48
----------------------------------------------------------------------------
 >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1285.00  DOWNSTREAM(FEET) =  1255.00
 FLOW LENGTH(FEET) =  1079.23   MANNING'S N =  0.014
 GIVEN BOX BASEWIDTH(FEET) =   6.00   GIVEN BOX HEIGHT(FEET) =   5.00
 FLOWDEPTH IN BOX IS  1.85 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  19.40
 BOX-FLOW(CFS) =    215.46
 BOX-FLOW TRAVEL TIME(MIN.) =   0.93    Tc(MIN.) =  23.65
 LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21360.00 = 10322.36 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021360.0 TO NODE LR021360.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  23.65
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.399
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        4.55      0.75      0.60    56
 MOBILE HOME PARK           B        1.01      0.75      0.25    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.54
 SUBAREA AREA(ACRES) =    5.56      SUBAREA RUNOFF(CFS) =    4.99
 EFFECTIVE AREA(ACRES) =    251.91   AREA-AVERAGED Fm(INCH/HR) =  0.46
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.61
 TOTAL AREA(ACRES) =    251.91       PEAK FLOW RATE(CFS) =     215.46
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
```

```
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

****************************************************************************
  FLOW PROCESS FROM NODE LR021360.0 TO NODE LR021360.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021320.0 TO NODE LR021321.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   911.31
  ELEVATION DATA: UPSTREAM(FEET) =   1510.00  DOWNSTREAM(FEET) =   1450.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.841
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.233
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        7.00      0.75      0.60    56   10.84
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     11.24
  TOTAL AREA(ACRES) =      7.00   PEAK FLOW RATE(CFS) =     11.24

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

****************************************************************************
  FLOW PROCESS FROM NODE LR021321.0 TO NODE LR021322.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1450.00  DOWNSTREAM(FEET) =   1420.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   725.48   CHANNEL SLOPE =  0.0414
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     11.24
  FLOW VELOCITY(FEET/SEC.) =   2.03   FLOW DEPTH(FEET) =   0.33
  TRAVEL TIME(MIN.) =   5.96   Tc(MIN.) =  16.80
  LONGEST FLOWPATH FROM NODE  21320.00 TO NODE  21322.00 =  1636.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021322.0 TO NODE LR021322.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  16.80
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.717
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```



```
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        9.15      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =     9.15      SUBAREA RUNOFF(CFS) =   10.45
  EFFECTIVE AREA(ACRES) =     16.15   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     16.15       PEAK FLOW RATE(CFS) =      18.44

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

****************************************************************************
  FLOW PROCESS FROM NODE LR021322.0 TO NODE LR021332.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1420.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1355.00
  FLOW LENGTH(FEET) =  1402.23   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  36.0 INCH PIPE IS   8.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.97
  PIPE-FLOW(CFS) =     18.44
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.67    Tc(MIN.) =  18.47
  LONGEST FLOWPATH FROM NODE  21320.00 TO NODE  21332.00 =  3039.02 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021332.0 TO NODE LR021332.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  18.47
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.622
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        9.34      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =     9.34      SUBAREA RUNOFF(CFS) =    9.86
  EFFECTIVE AREA(ACRES) =     25.49   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     25.49       PEAK FLOW RATE(CFS) =      26.92

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

****************************************************************************
  FLOW PROCESS FROM NODE LR021332.0 TO NODE LR021332.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
```

```
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  18.47
  RAINFALL INTENSITY(INCH/HR) =   1.62
  AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.60
  EFFECTIVE STREAM AREA(ACRES) =    25.49
  TOTAL STREAM AREA(ACRES) =    25.49
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     26.92

****************************************************************************
  FLOW PROCESS FROM NODE LR021330.0 TO NODE LR021331.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   870.87
  ELEVATION DATA: UPSTREAM(FEET) =   1440.00  DOWNSTREAM(FEET) =   1425.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.920
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.922
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        9.67      0.75      0.60    56   13.92
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA RUNOFF(CFS) =     12.82
  TOTAL AREA(ACRES) =      9.67   PEAK FLOW RATE(CFS) =     12.82

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

****************************************************************************
  FLOW PROCESS FROM NODE LR021331.0 TO NODE LR021332.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1425.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1355.00
  FLOW LENGTH(FEET) =  1286.35   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  36.0 INCH PIPE IS   7.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.30
  PIPE-FLOW(CFS) =     12.82
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.71    Tc(MIN.) =  15.63
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.793
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       22.89      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
```



```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   22.89      SUBAREA RUNOFF(CFS) =   27.70
  EFFECTIVE AREA(ACRES) =     32.56    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     32.56        PEAK FLOW RATE(CFS) =     39.40

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  6.0       STREET HALFWIDTH(FEET) = 18.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.66
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   26.58
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.43
    HALFSTREET FLOOD WIDTH(FEET) =   15.07
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.56
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.38
  LONGEST FLOWPATH FROM NODE  21330.00 TO NODE  21332.00 =  2157.22 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021332.0 TO NODE LR021332.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.63
  RAINFALL INTENSITY(INCH/HR) =   1.79
  AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.60
  EFFECTIVE STREAM AREA(ACRES) =    32.56
  TOTAL STREAM AREA(ACRES) =    32.56
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     39.40

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     26.92  18.47    1.622  0.75( 0.45) 0.60    25.5 LR021320.0
      2     39.40  15.63    1.793  0.75( 0.45) 0.60    32.6 LR021330.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     65.49  15.63    1.793  0.75( 0.45) 0.60    54.1 LR021330.0
```

```
     2     61.30  18.47    1.622  0.75( 0.45) 0.60    58.0 LR021320.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     65.49    Tc(MIN.) =    15.63
  EFFECTIVE AREA(ACRES) =    54.13   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     58.05
  LONGEST FLOWPATH FROM NODE  21320.00 TO NODE  21332.00 =  3039.02 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021332.0 TO NODE LR021355.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1355.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1325.00
  FLOW LENGTH(FEET) =   766.86   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  17.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.63
  PIPE-FLOW(CFS) =     65.49
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.69    Tc(MIN.) =  16.31
  LONGEST FLOWPATH FROM NODE  21320.00 TO NODE  21355.00 =  3805.88 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021355.0 TO NODE LR021355.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  16.31
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.748
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       14.76      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   14.76      SUBAREA RUNOFF(CFS) =   17.25
  EFFECTIVE AREA(ACRES) =     68.89   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     72.81       PEAK FLOW RATE(CFS) =      80.52

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

****************************************************************************
  FLOW PROCESS FROM NODE LR021355.0 TO NODE LR021355.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021340.0 TO NODE LR021341.0 IS CODE =  21
----------------------------------------------------------------------------
```



```
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   528.12
  ELEVATION DATA: UPSTREAM(FEET) =   1610.00  DOWNSTREAM(FEET) =   1530.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.378
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.813
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.56      0.75      0.60    56    7.38
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        3.79      0.75      0.70    56    7.84
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA RUNOFF(CFS) =      9.00
  TOTAL AREA(ACRES) =      4.35   PEAK FLOW RATE(CFS) =      9.00

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

****************************************************************************
  FLOW PROCESS FROM NODE LR021341.0 TO NODE LR021342.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1530.00  DOWNSTREAM ELEVATION(FEET) = 1490.00
  STREET LENGTH(FEET) =   644.80   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.66

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      22.96
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.40
    HALFSTREET FLOOD WIDTH(FEET) =   13.90
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.60
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.26
  STREET FLOW TRAVEL TIME(MIN.) =   1.92   Tc(MIN.) =   9.30
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.449
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       10.28      0.75      0.60    56
  RESIDENTIAL
```

```
"2 DWELLINGS/ACRE"         B        5.38      0.75      0.70    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.63
SUBAREA AREA(ACRES) =   15.66      SUBAREA RUNOFF(CFS) =   27.83
EFFECTIVE AREA(ACRES) =     20.01    AREA-AVERAGED Fm(INCH/HR) =  0.48
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.65
TOTAL AREA(ACRES) =     20.01        PEAK FLOW RATE(CFS) =      35.40

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.46   HALFSTREET FLOOD WIDTH(FEET) =  16.48
FLOW VELOCITY(FEET/SEC.) =  6.25   DEPTH*VELOCITY(FT*FT/SEC.) =   2.85
LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21342.00 =  1172.92 FEET.

****************************************************************************
FLOW PROCESS FROM NODE LR021342.0 TO NODE LR021343.0 IS CODE =  63
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 1490.00  DOWNSTREAM ELEVATION(FEET) = 1425.00
STREET LENGTH(FEET) =  1308.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      68.07
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.56
  HALFSTREET FLOOD WIDTH(FEET) =   20.88
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.20
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.02
STREET FLOW TRAVEL TIME(MIN.) =   3.03   Tc(MIN.) =  12.32
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.068
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B       12.19      0.75      0.60    56
RESIDENTIAL
"2 DWELLINGS/ACRE"         B       33.88      0.75      0.70    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.67
SUBAREA AREA(ACRES) =   46.07      SUBAREA RUNOFF(CFS) =   64.85
EFFECTIVE AREA(ACRES) =     66.08    AREA-AVERAGED Fm(INCH/HR) =  0.50
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.67
TOTAL AREA(ACRES) =     66.08        PEAK FLOW RATE(CFS) =      93.39
```



```
SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.61   HALFSTREET FLOOD WIDTH(FEET) =  23.45
FLOW VELOCITY(FEET/SEC.) =  7.96   DEPTH*VELOCITY(FT*FT/SEC.) =   4.85
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
       AND L = 1308.0 FT WITH ELEVATION-DROP =  65.0 FT, IS   61.2 CFS,
       WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21343.00
LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21343.00 =  2480.92 FEET.

****************************************************************************
FLOW PROCESS FROM NODE LR021343.0 TO NODE LR021354.0 IS CODE =  42
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
UPSTREAM NODE ELEVATION(FEET) =  1425.00
DOWNSTREAM NODE ELEVATION(FEET) =  1380.00
FLOW LENGTH(FEET) =  1461.18   MANNING'S N =  0.013

USER SPECIFIED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
DEPTH OF FLOW IN  45.0 INCH PIPE IS  20.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  18.60
PIPE-FLOW(CFS) =     93.39
*NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
PIPEFLOW TRAVEL TIME(MIN.) =   1.31    Tc(MIN.) =  13.63
LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21354.00 =  3942.10 FEET.

****************************************************************************
FLOW PROCESS FROM NODE LR021354.0 TO NODE LR021354.0 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN) =  13.63
*  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.946
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B       23.13      0.75      0.60    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
SUBAREA AREA(ACRES) =   23.13      SUBAREA RUNOFF(CFS) =   31.17
EFFECTIVE AREA(ACRES) =     89.21   AREA-AVERAGED Fm(INCH/HR) =  0.48
AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.65
TOTAL AREA(ACRES) =     89.21       PEAK FLOW RATE(CFS) =     117.34

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

****************************************************************************
FLOW PROCESS FROM NODE LR021354.0 TO NODE LR021354.0 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
```

```
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  13.63
  RAINFALL INTENSITY(INCH/HR) =   1.95
  AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.65
  EFFECTIVE STREAM AREA(ACRES) =    89.21
  TOTAL STREAM AREA(ACRES) =    89.21
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    117.34

****************************************************************************
  FLOW PROCESS FROM NODE LR021350.0 TO NODE LR021351.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   820.03
  ELEVATION DATA: UPSTREAM(FEET) =   1555.00  DOWNSTREAM(FEET) =   1510.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.778
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.241
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.46      0.75      0.70    56   11.46
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.41      0.75      0.60    56   10.78
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA RUNOFF(CFS) =      7.56
  TOTAL AREA(ACRES) =      4.87   PEAK FLOW RATE(CFS) =      7.56

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

****************************************************************************
  FLOW PROCESS FROM NODE LR021351.0 TO NODE LR021352.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1510.00  DOWNSTREAM(FEET) =   1480.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   236.29   CHANNEL SLOPE =  0.1270
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      7.56
  FLOW VELOCITY(FEET/SEC.) =   2.81   FLOW DEPTH(FEET) =   0.23
  TRAVEL TIME(MIN.) =   1.40   Tc(MIN.) =  12.18
  LONGEST FLOWPATH FROM NODE  21350.00 TO NODE  21352.00 =  1056.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021352.0 TO NODE LR021352.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  12.18
```



```
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.083
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.96      0.75      0.70    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.22      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =     2.18      SUBAREA RUNOFF(CFS) =     3.07
  EFFECTIVE AREA(ACRES) =      7.05   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =      7.05       PEAK FLOW RATE(CFS) =       9.94

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

****************************************************************************
  FLOW PROCESS FROM NODE LR021352.0 TO NODE LR021352.5 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1480.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1460.00
  FLOW LENGTH(FEET) =   207.56   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  45.0 INCH PIPE IS   5.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.64
  PIPE-FLOW(CFS) =      9.94
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =  12.41
  LONGEST FLOWPATH FROM NODE  21350.00 TO NODE  21352.50 =  1263.88 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021352.5 TO NODE LR021352.5 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  12.41
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.059
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.89      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.98      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.69
  SUBAREA AREA(ACRES) =     7.87      SUBAREA RUNOFF(CFS) =    10.93
  EFFECTIVE AREA(ACRES) =     14.92   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     14.92       PEAK FLOW RATE(CFS) =      20.72

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
```

```
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

****************************************************************************
  FLOW PROCESS FROM NODE LR021352.5 TO NODE LR021353.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1460.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1450.00
  FLOW LENGTH(FEET) =   277.00   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  45.0 INCH PIPE IS   9.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.91
  PIPE-FLOW(CFS) =     20.72
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.36    Tc(MIN.) =  12.77
  LONGEST FLOWPATH FROM NODE  21350.00 TO NODE  21353.00 =  1540.88 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021353.0 TO NODE LR021353.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  12.77
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.024
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.59      0.75      0.60    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        7.66      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.68
  SUBAREA AREA(ACRES) =    9.25      SUBAREA RUNOFF(CFS) =   12.60
  EFFECTIVE AREA(ACRES) =     24.17   AREA-AVERAGED Fm(INCH/HR) =  0.51
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.69
  TOTAL AREA(ACRES) =     24.17       PEAK FLOW RATE(CFS) =      32.85

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

****************************************************************************
  FLOW PROCESS FROM NODE LR021353.0 TO NODE LR021354.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1450.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1380.00
  FLOW LENGTH(FEET) =  2039.85   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  11.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.49
  PIPE-FLOW(CFS) =     32.85
```



```
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   2.35    Tc(MIN.) =  15.12
  LONGEST FLOWPATH FROM NODE  21350.00 TO NODE  21354.00 =  3580.73 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021354.0 TO NODE LR021354.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  15.12
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.829
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       33.72      0.75      0.60    56
  COMMERCIAL                 B        0.32      0.75      0.10    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.48      0.75      0.70    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   35.52      SUBAREA RUNOFF(CFS) =   44.14
  EFFECTIVE AREA(ACRES) =     59.69   AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.64
  TOTAL AREA(ACRES) =     59.69       PEAK FLOW RATE(CFS) =      72.75

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

****************************************************************************
  FLOW PROCESS FROM NODE LR021354.0 TO NODE LR021354.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.12
  RAINFALL INTENSITY(INCH/HR) =   1.83
  AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.64
  EFFECTIVE STREAM AREA(ACRES) =    59.69
  TOTAL STREAM AREA(ACRES) =    59.69
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     72.75

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    117.34  13.63    1.946  0.75( 0.48) 0.65    89.2 LR021340.0
      2     72.75  15.12    1.829  0.75( 0.48) 0.64    59.7 LR021350.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
```

```
     1    188.62  13.63    1.946  0.75( 0.48) 0.64   143.0 LR021340.0
     2    180.69  15.12    1.829  0.75( 0.48) 0.64   148.9 LR021350.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    188.62    Tc(MIN.) =    13.63
  EFFECTIVE AREA(ACRES) =   143.04   AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.64
  TOTAL AREA(ACRES) =    148.90
  LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21354.00 =  3942.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021354.0 TO NODE LR021355.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1380.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1325.00
  FLOW LENGTH(FEET) =  1308.82   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  26.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  24.93
  PIPE-FLOW(CFS) =    188.62
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.88    Tc(MIN.) =  14.51
  LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21355.00 =  5250.92 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021355.0 TO NODE LR021355.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  14.51
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.875
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        6.86      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    6.86      SUBAREA RUNOFF(CFS) =    8.81
  EFFECTIVE AREA(ACRES) =    149.90   AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.64
  TOTAL AREA(ACRES) =    155.76       PEAK FLOW RATE(CFS) =     188.62
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

****************************************************************************
  FLOW PROCESS FROM NODE LR021355.0 TO NODE LR021355.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
```



```
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    188.62  14.56    1.871  0.75( 0.48) 0.64   149.9 LR021340.0
      2    180.69  16.06    1.764  0.75( 0.48) 0.64   155.8 LR021350.0
  LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21355.00 =  5250.92 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     80.35  16.36    1.745  0.75( 0.45) 0.60    68.9 LR021330.0
      2     74.41  19.21    1.584  0.75( 0.45) 0.60    72.8 LR021320.0
  LONGEST FLOWPATH FROM NODE  21320.00 TO NODE  21355.00 =  3805.88 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    267.11  14.56    1.871  0.75( 0.47) 0.63   211.2 LR021340.0
      2    260.76  16.06    1.764  0.75( 0.47) 0.63   223.4 LR021350.0
      3    258.32  16.36    1.745  0.75( 0.47) 0.63   224.6 LR021330.0
      4    229.79  19.21    1.584  0.75( 0.47) 0.63   228.6 LR021320.0
    TOTAL AREA(ACRES) =    228.57

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      267.11  Tc(MIN.) =   14.563
  EFFECTIVE AREA(ACRES) =    211.23  AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.63
  TOTAL AREA(ACRES) =    228.57
  LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21355.00 =  5250.92 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021355.0 TO NODE LR021355.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021355.0 TO NODE LR021356.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1325.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1315.00
  FLOW LENGTH(FEET) =   763.37   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  75.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  75.0 INCH PIPE IS  37.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.57
  PIPE-FLOW(CFS) =    267.11
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.72    Tc(MIN.) =  15.29
  LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21356.00 =  6014.29 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021356.0 TO NODE LR021356.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```

```
  MAINLINE Tc(MIN) =  15.29
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.817
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.42      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    4.42      SUBAREA RUNOFF(CFS) =    5.44
  EFFECTIVE AREA(ACRES) =    215.65   AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.63
  TOTAL AREA(ACRES) =    232.99       PEAK FLOW RATE(CFS) =     267.11
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

****************************************************************************
  FLOW PROCESS FROM NODE LR021356.0 TO NODE LR021357.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1315.00  DOWNSTREAM(FEET) =   1296.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   552.93   CHANNEL SLOPE =  0.0344
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   4.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    267.11
  FLOW VELOCITY(FEET/SEC.) =  10.26   FLOW DEPTH(FEET) =   2.13
  TRAVEL TIME(MIN.) =   0.90   Tc(MIN.) =  16.19
  LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21357.00 =  6567.22 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021357.0 TO NODE LR021357.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  16.19
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.756
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       38.32      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   38.32      SUBAREA RUNOFF(CFS) =   45.08
  EFFECTIVE AREA(ACRES) =    253.97   AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =    271.31       PEAK FLOW RATE(CFS) =     294.60

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

****************************************************************************
  FLOW PROCESS FROM NODE LR021357.0 TO NODE LR021358.0 IS CODE =  54
----------------------------------------------------------------------------
```



```
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1296.00  DOWNSTREAM(FEET) =   1285.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   511.89   CHANNEL SLOPE =  0.0215
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   4.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    294.60
  FLOW VELOCITY(FEET/SEC.) =   8.92   FLOW DEPTH(FEET) =   2.53
  TRAVEL TIME(MIN.) =   0.96   Tc(MIN.) =  17.14
  LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21358.00 =  7079.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021358.0 TO NODE LR021358.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.14
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.696
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        7.40      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    7.40      SUBAREA RUNOFF(CFS) =    8.31
  EFFECTIVE AREA(ACRES) =    261.37   AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =    278.71       PEAK FLOW RATE(CFS) =     294.60
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

****************************************************************************
  FLOW PROCESS FROM NODE LR021358.0 TO NODE LR021359.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1285.00  DOWNSTREAM(FEET) =   1267.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   575.39   CHANNEL SLOPE =  0.0313
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   4.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    294.60
  FLOW VELOCITY(FEET/SEC.) =  10.20   FLOW DEPTH(FEET) =   2.29
  TRAVEL TIME(MIN.) =   0.94   Tc(MIN.) =  18.08
  LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21359.00 =  7654.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021359.0 TO NODE LR021359.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  18.08
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.643
  SUBAREA LOSS RATE DATA(AMC  II):
```

```
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        4.95      0.75       0.60    56
  COMMERCIAL                  B        2.16      0.75       0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.45
  SUBAREA AREA(ACRES) =    7.11      SUBAREA RUNOFF(CFS) =    8.37
  EFFECTIVE AREA(ACRES) =    268.48   AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =    285.82       PEAK FLOW RATE(CFS) =     294.60
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

****************************************************************************
  FLOW PROCESS FROM NODE LR021359.0 TO NODE LR021360.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1267.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1255.00
  FLOW LENGTH(FEET) =   711.66   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  78.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  78.0 INCH PIPE IS  35.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.78
  PIPE-FLOW(CFS) =    294.60
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.60    Tc(MIN.) =  18.68
  LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21360.00 =  8366.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021360.0 TO NODE LR021360.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  18.68
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.611
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        3.67      0.75       0.60    56
  MOBILE HOME PARK            B        0.92      0.75       0.25    56
  COMMERCIAL                  B        0.01      0.75       0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.53
  SUBAREA AREA(ACRES) =    4.60      SUBAREA RUNOFF(CFS) =    5.03
  EFFECTIVE AREA(ACRES) =    273.08   AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =    290.42       PEAK FLOW RATE(CFS) =     294.60
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR021360.0 TO NODE LR021360.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    293.92  18.77    1.607  0.75( 0.46) 0.62   273.1 LR021340.0
      2    286.27  20.29    1.533  0.75( 0.46) 0.62   285.2 LR021350.0
      3    283.62  20.60    1.519  0.75( 0.46) 0.62   286.5 LR021330.0
      4    253.36  23.59    1.401  0.75( 0.46) 0.62   290.4 LR021320.0
  LONGEST FLOWPATH FROM NODE  21340.00 TO NODE  21360.00 =  8366.16 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    215.46  23.65    1.399  0.75( 0.46) 0.61   251.9 LR021300.0
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21360.00 = 10322.36 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    502.79  18.77    1.607  0.75( 0.46) 0.62   473.0 LR021340.0
      2    497.64  20.29    1.533  0.75( 0.46) 0.62   501.4 LR021350.0
      3    495.44  20.60    1.519  0.75( 0.46) 0.62   505.9 LR021330.0
      4    468.76  23.59    1.401  0.75( 0.46) 0.62   541.7 LR021320.0
      5    468.28  23.65    1.399  0.75( 0.46) 0.62   542.3 LR021300.0
    TOTAL AREA(ACRES) =    542.33

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      502.79  Tc(MIN.) =   18.768
  EFFECTIVE AREA(ACRES) =    473.01  AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =    542.33
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21360.00 = 10322.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021360.0 TO NODE LR021360.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021360.0 TO NODE LR021361.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1255.00  DOWNSTREAM(FEET) =   1240.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   770.40   CHANNEL SLOPE =  0.0195
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   6.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    502.79
  FLOW VELOCITY(FEET/SEC.) =   9.66   FLOW DEPTH(FEET) =   2.92
  TRAVEL TIME(MIN.) =   1.33   Tc(MIN.) =  20.10
```

```
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21361.00 = 11092.76 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021361.0 TO NODE LR021361.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  20.10
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.542
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       11.84      0.75      0.60    56
  MOBILE HOME PARK           B        3.43      0.75      0.25    56
  COMMERCIAL                 B        1.54      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.48
  SUBAREA AREA(ACRES) =   16.81      SUBAREA RUNOFF(CFS) =   17.87
  EFFECTIVE AREA(ACRES) =    489.82   AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.61
  TOTAL AREA(ACRES) =    559.14       PEAK FLOW RATE(CFS) =     502.79
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

****************************************************************************
  FLOW PROCESS FROM NODE LR021361.0 TO NODE LR021361.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021248.0 TO NODE LR021248.0 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 21248.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      925.67    Tc(MIN.) =  34.32
  AREA-AVERAGED Fm(INCH/HR) =  0.46    Ybar = 0.58
  TOTAL AREA(ACRES) =    1340.40
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21248.00 = 15575.76 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021248.0 TO NODE LR021248.0 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      925.67    Tc(MIN.) =  34.32
  AREA-AVERAGED Fm(INCH/HR) =  0.46    Ybar = 0.58
  TOTAL AREA(ACRES) =    1340.40
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21248.00 = 15575.76 FEET.

****************************************************************************
```



```
  FLOW PROCESS FROM NODE LR021248.0 TO NODE LR021248.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021248.0 TO NODE LR021361.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1280.00  DOWNSTREAM(FEET) =   1240.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1507.42   CHANNEL SLOPE =  0.0265
  CHANNEL BASE(FEET) =    9.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    925.67
  FLOW VELOCITY(FEET/SEC.) =  24.14   FLOW DEPTH(FEET) =   2.67
  TRAVEL TIME(MIN.) =   1.04   Tc(MIN.) =  35.36
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21361.00 = 17083.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021361.0 TO NODE LR021361.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  35.36
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.099
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       42.57      0.75      0.60    56
  MOBILE HOME PARK           B       41.35      0.75      0.25    56
  COMMERCIAL                 B       17.40      0.75      0.10    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        0.33      0.63      1.00    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.37
  SUBAREA AREA(ACRES) =  101.65
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.32;6H= 1.81;24H= 3.42
  S-GRAPH: VALLEY(DEV.)= 94.5%;VALLEY(UNDEV.)/DESERT=  5.5%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.59; LAG(HR) = 0.47; Fm(INCH/HR) = 0.45; Ybar = 0.57
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.94; 30M = 0.94; 1HR = 0.94;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   1442.05
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21361.00 = 17083.18 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0346; Lca/L=0.4,n=.0310; Lca/L=0.5,n=.0285;Lca/L=0.6,n=.0266
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     192.69
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    975.15
  TOTAL AREA(ACRES) =   1442.05       PEAK FLOW RATE(CFS) =     975.15

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR021361.0 TO NODE LR021361.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =      975.15    Tc(MIN.) =  35.36
  AREA-AVERAGED Fm(INCH/HR) =  0.45    Ybar = 0.57
  TOTAL AREA(ACRES) =    1442.05
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21361.00 = 17083.18 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    502.79  20.10    1.542  0.75( 0.46) 0.61   489.8 LR021340.0
      2    497.64  21.63    1.476  0.75( 0.46) 0.61   518.2 LR021350.0
      3    495.44  21.94    1.463  0.75( 0.46) 0.61   522.8 LR021330.0
      4    468.76  24.95    1.354  0.75( 0.46) 0.61   558.6 LR021320.0
      5    468.28  25.01    1.353  0.75( 0.46) 0.61   559.1 LR021300.0
  LONGEST FLOWPATH FROM NODE  21300.00 TO NODE  21361.00 = 11092.76 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.31;6H= 1.79;24H= 3.36
  S-GRAPH: VALLEY(DEV.)= 96.0%;VALLEY(UNDEV.)/DESERT=  4.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.59; LAG(HR) = 0.47; Fm(INCH/HR) = 0.45; Ybar = 0.57
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.91; 30M = 0.91; 1HR = 0.91;
  3HR = 0.99; 6HR = 0.99; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   2001.19
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21361.00 = 17083.18 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0346; Lca/L=0.4,n=.0310; Lca/L=0.5,n=.0285;Lca/L=0.6,n=.0266
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     259.14
  PEAK FLOW RATE(CFS) =    1308.89

****************************************************************************
  FLOW PROCESS FROM NODE LR021361.0 TO NODE LR021361.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021361.0 TO NODE LR021378.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1240.00  DOWNSTREAM(FEET) =   1235.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   988.61   CHANNEL SLOPE =  0.0051
  CHANNEL BASE(FEET) =   13.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   6.50
  CHANNEL FLOW THRU SUBAREA(CFS) =   1308.89
  FLOW VELOCITY(FEET/SEC.) =  14.21   FLOW DEPTH(FEET) =   4.28
  TRAVEL TIME(MIN.) =   1.16   Tc(MIN.) =  36.52
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21378.00 = 18071.79 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR021378.0 TO NODE LR021378.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  36.52
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.078
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.75      0.75       0.60    56
  COMMERCIAL                 B       11.57      0.75       0.10    56
  MOBILE HOME PARK           B       12.66      0.75       0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.25
  SUBAREA AREA(ACRES) =   28.98
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.31;6H= 1.79;24H= 3.36
  S-GRAPH: VALLEY(DEV.)= 96.1%;VALLEY(UNDEV.)/DESERT=  3.9%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.61; LAG(HR) = 0.49; Fm(INCH/HR) = 0.45; Ybar = 0.57
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.91; 30M = 0.91; 1HR = 0.91;
  3HR = 0.99; 6HR = 0.99; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   2030.17
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21378.00 = 18071.79 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0340; Lca/L=0.4,n=.0304; Lca/L=0.5,n=.0280;Lca/L=0.6,n=.0261
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     264.87
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1285.64
  TOTAL AREA(ACRES) =   2030.17       PEAK FLOW RATE(CFS) =    1308.89
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

****************************************************************************
  FLOW PROCESS FROM NODE LR021378.0 TO NODE LR021378.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =    1308.89    Tc(MIN.) =  36.52
  AREA-AVERAGED Fm(INCH/HR) =  0.45   Ybar = 0.57
  TOTAL AREA(ACRES) =    2030.17

****************************************************************************
  FLOW PROCESS FROM NODE LR021370.0 TO NODE LR021371.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   627.80
  ELEVATION DATA: UPSTREAM(FEET) =   1415.00  DOWNSTREAM(FEET) =   1390.00
```

```
  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.620
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.759
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.63      0.75      0.60    56   10.33
  COMMERCIAL                 B        3.67      0.75      0.10    56    7.62
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.35
  SUBAREA RUNOFF(CFS) =     16.42
  TOTAL AREA(ACRES) =      7.30   PEAK FLOW RATE(CFS) =     16.42

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

****************************************************************************
  FLOW PROCESS FROM NODE LR021371.0 TO NODE LR021372.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1390.00  DOWNSTREAM ELEVATION(FEET) = 1380.00
  STREET LENGTH(FEET) =   602.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      21.33
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.48
    HALFSTREET FLOOD WIDTH(FEET) =   17.49
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.36
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.60
  STREET FLOW TRAVEL TIME(MIN.) =   2.99   Tc(MIN.) =  10.61
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.262
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.99      0.75      0.60    56
  COMMERCIAL                 B        0.01      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    6.00      SUBAREA RUNOFF(CFS) =    9.79
  EFFECTIVE AREA(ACRES) =     13.30    AREA-AVERAGED Fm(INCH/HR) =  0.35
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.46
  TOTAL AREA(ACRES) =     13.30        PEAK FLOW RATE(CFS) =      22.94
```



```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.49   HALFSTREET FLOOD WIDTH(FEET) =  18.00
  FLOW VELOCITY(FEET/SEC.) =  3.40   DEPTH*VELOCITY(FT*FT/SEC.) =   1.66
  LONGEST FLOWPATH FROM NODE  21370.00 TO NODE  21372.00 =  1230.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021372.0 TO NODE LR021373.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1380.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1365.00
  FLOW LENGTH(FEET) =   527.76   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  11.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.49
  PIPE-FLOW(CFS) =     22.94
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.75    Tc(MIN.) =  11.36
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.172
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.16      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    5.16      SUBAREA RUNOFF(CFS) =    8.00
  EFFECTIVE AREA(ACRES) =     18.46    AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =     18.46        PEAK FLOW RATE(CFS) =     29.86

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  6.0       STREET HALFWIDTH(FEET) = 18.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =    6.92
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.32
    HALFSTREET FLOOD WIDTH(FEET) =    9.91
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.14
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.02
  LONGEST FLOWPATH FROM NODE  21370.00 TO NODE  21373.00 =  1758.06 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR021373.0 TO NODE LR021374.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1365.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1345.00
  FLOW LENGTH(FEET) =   326.48   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  10.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.72
  PIPE-FLOW(CFS) =     29.86
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.33    Tc(MIN.) =  11.68
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.135
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.94      0.75      0.60    56
  COMMERCIAL                 B        0.17      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.58
  SUBAREA AREA(ACRES) =    5.11      SUBAREA RUNOFF(CFS) =    7.81
  EFFECTIVE AREA(ACRES) =     23.57    AREA-AVERAGED Fm(INCH/HR) =  0.39
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.52
  TOTAL AREA(ACRES) =     23.57        PEAK FLOW RATE(CFS) =     37.07

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  6.0       STREET HALFWIDTH(FEET) = 18.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.64
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =    7.21
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.30
    HALFSTREET FLOOD WIDTH(FEET) =    8.51
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.28
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.27
  LONGEST FLOWPATH FROM NODE  21370.00 TO NODE  21374.00 =  2084.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021374.0 TO NODE LR021375.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
```



```
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1345.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1330.00
  FLOW LENGTH(FEET) =   319.60   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  12.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.11
  PIPE-FLOW(CFS) =     37.07
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =  12.00
  LONGEST FLOWPATH FROM NODE  21370.00 TO NODE  21375.00 =  2404.14 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021375.0 TO NODE LR021375.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  12.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.102
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       10.88      0.75      0.60    56
  COMMERCIAL                 B       14.84      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.31
  SUBAREA AREA(ACRES) =   25.72      SUBAREA RUNOFF(CFS) =   43.26
  EFFECTIVE AREA(ACRES) =     49.29   AREA-AVERAGED Fm(INCH/HR) =  0.31
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.41
  TOTAL AREA(ACRES) =     49.29       PEAK FLOW RATE(CFS) =      79.61

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

****************************************************************************
  FLOW PROCESS FROM NODE LR021375.0 TO NODE LR021376.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1330.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1275.00
  FLOW LENGTH(FEET) =  1914.40   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  20.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.42
  PIPE-FLOW(CFS) =     79.61
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.83    Tc(MIN.) =  13.83
  LONGEST FLOWPATH FROM NODE  21370.00 TO NODE  21376.00 =  4318.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021376.0 TO NODE LR021376.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
```

```
================================================================================
  MAINLINE Tc(MIN) =  13.83
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.930
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B       33.59      0.75      0.60    56
  MOBILE HOME PARK            B        3.65      0.75      0.25    56
  COMMERCIAL                  B        1.26      0.75      0.10    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.55
  SUBAREA AREA(ACRES) =   38.50      SUBAREA RUNOFF(CFS) =   52.60
  EFFECTIVE AREA(ACRES) =     87.79   AREA-AVERAGED Fm(INCH/HR) =  0.35
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.47
  TOTAL AREA(ACRES) =     87.79       PEAK FLOW RATE(CFS) =     124.60

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

********************************************************************************
  FLOW PROCESS FROM NODE LR021376.0 TO NODE LR021377.0 IS CODE =  42
--------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
================================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1275.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1257.00
  FLOW LENGTH(FEET) =   629.69   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  24.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.45
  PIPE-FLOW(CFS) =    124.60
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.54    Tc(MIN.) =  14.37
  LONGEST FLOWPATH FROM NODE  21370.00 TO NODE  21377.00 =  4948.23 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE LR021377.0 TO NODE LR021377.0 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN) =  14.37
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.886
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK            B       12.70      0.75      0.25    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        4.69      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.34
  SUBAREA AREA(ACRES) =   17.39      SUBAREA RUNOFF(CFS) =   25.49
  EFFECTIVE AREA(ACRES) =    105.18   AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.45
  TOTAL AREA(ACRES) =    105.18       PEAK FLOW RATE(CFS) =     146.62
```



```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

********************************************************************************
  FLOW PROCESS FROM NODE LR021377.0 TO NODE LR021378.0 IS CODE =  42
--------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
================================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1257.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1235.00
  FLOW LENGTH(FEET) =  1320.25   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  57.0 INCH PIPE IS  28.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.55
  PIPE-FLOW(CFS) =    146.62
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.33    Tc(MIN.) =  15.70
  LONGEST FLOWPATH FROM NODE  21370.00 TO NODE  21378.00 =  6268.48 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE LR021378.0 TO NODE LR021378.0 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN) =  15.70
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.789
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK            B       17.63      0.75      0.25    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.65      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.26
  SUBAREA AREA(ACRES) =   18.28      SUBAREA RUNOFF(CFS) =   26.20
  EFFECTIVE AREA(ACRES) =    123.46   AREA-AVERAGED Fm(INCH/HR) =  0.32
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.42
  TOTAL AREA(ACRES) =    123.46       PEAK FLOW RATE(CFS) =     163.58

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.20

********************************************************************************
  FLOW PROCESS FROM NODE LR021378.0 TO NODE LR021378.0 IS CODE =   1
--------------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.70
  RAINFALL INTENSITY(INCH/HR) =   1.79
  AREA-AVERAGED Fm(INCH/HR) =  0.32
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.42
  EFFECTIVE STREAM AREA(ACRES) =   123.46
```

```
  TOTAL STREAM AREA(ACRES) =   123.46
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    163.58
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1      1308.89   36.52     2030.17  LR021100.0
     2       163.58   15.70      123.46  LR021370.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.31;6H= 1.78;24H= 3.35
  S-GRAPH: VALLEY(DEV.)= 96.3%;VALLEY(UNDEV.)/DESERT=  3.7%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.61; LAG(HR) = 0.49; Fm(INCH/HR) = 0.44; Ybar = 0.56
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.90; 30M = 0.90; 1HR = 0.90;
  3HR = 0.99; 6HR = 0.99; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   2153.63
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21378.00 = 18071.79 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0340; Lca/L=0.4,n=.0304; Lca/L=0.5,n=.0280;Lca/L=0.6,n=.0261
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     284.50
  PEAK FLOW RATE(CFS) =   1365.52

****************************************************************************
  FLOW PROCESS FROM NODE LR021378.0 TO NODE LR021378.0 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 21378.DNA
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =   2153.63  TC(MIN.) =     36.52
  AREA-AVERAGED Fm(INCH/HR)=  0.44   Ybar =  0.56
  PEAK FLOW RATE(CFS)   =   1365.52
============================================================================
============================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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             Ver. 8.0  Release Date: 01/01/2002  License ID 1224

                          Analysis prepared by:

                          San Bernardino County
                    Transportation/ Flood Control Department

                          Water Resources Division

 ************************ DESCRIPTION OF STUDY *************************
* LR0214ZZ                                                             *
* 10- Year Storm                                                       *
*                                                                      *
 ************************************************************************

  FILE NAME: LR0214ZZ.Z10
  TIME/DATE OF STUDY: 09:58 02/22/2006
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 0.8000

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
```



```
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0313 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0313 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.20 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


************************************************************************
  FLOW PROCESS FROM NODE LR021400.0 TO NODE LR021401.0 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   598.36
  ELEVATION DATA: UPSTREAM(FEET) =   1380.00  DOWNSTREAM(FEET) =   1360.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.742
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.733
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        8.19      0.75       0.60    56   10.49
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        0.62      0.75       0.70    56   11.15
  COMMERCIAL                 B        0.44      0.75       0.10    56    7.74
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.58
  SUBAREA RUNOFF(CFS) =     19.12
  TOTAL AREA(ACRES) =      9.25   PEAK FLOW RATE(CFS) =     19.12

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

************************************************************************
  FLOW PROCESS FROM NODE LR021401.0 TO NODE LR021402.0 IS CODE =  54
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1360.00  DOWNSTREAM(FEET) =   1336.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   415.44   CHANNEL SLOPE =  0.0578
```

```
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     19.12
  FLOW VELOCITY(FEET/SEC.) =   3.54   FLOW DEPTH(FEET) =   0.60
  TRAVEL TIME(MIN.) =   1.95   Tc(MIN.) =   9.70
  LONGEST FLOWPATH FROM NODE  21400.00 TO NODE  21402.00 =  1013.80 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021402.0 TO NODE LR021402.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =   9.70
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.388
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.47      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    3.47      SUBAREA RUNOFF(CFS) =    6.06
  EFFECTIVE AREA(ACRES) =     12.72   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.59
  TOTAL AREA(ACRES) =     12.72       PEAK FLOW RATE(CFS) =      22.31

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

****************************************************************************
  FLOW PROCESS FROM NODE LR021402.0 TO NODE LR021403.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1336.00  DOWNSTREAM(FEET) =   1327.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   198.50   CHANNEL SLOPE =  0.0453
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     22.31
  FLOW VELOCITY(FEET/SEC.) =   3.35   FLOW DEPTH(FEET) =   0.67
  TRAVEL TIME(MIN.) =   0.99   Tc(MIN.) =  10.68
  LONGEST FLOWPATH FROM NODE  21400.00 TO NODE  21403.00 =  1212.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021403.0 TO NODE LR021403.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  10.68
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.253
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.90      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
```



```
  SUBAREA AREA(ACRES) =    3.90      SUBAREA RUNOFF(CFS) =    6.33
  EFFECTIVE AREA(ACRES) =     16.62   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.59
  TOTAL AREA(ACRES) =     16.62       PEAK FLOW RATE(CFS) =      27.09

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

****************************************************************************
  FLOW PROCESS FROM NODE LR021403.0 TO NODE LR021404.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1327.00  DOWNSTREAM(FEET) =   1310.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   389.91   CHANNEL SLOPE =  0.0436
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     27.09
  FLOW VELOCITY(FEET/SEC.) =   3.48   FLOW DEPTH(FEET) =   0.72
  TRAVEL TIME(MIN.) =   1.87   Tc(MIN.) =  12.55
  LONGEST FLOWPATH FROM NODE  21400.00 TO NODE  21404.00 =  1602.21 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021404.0 TO NODE LR021404.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  12.55
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.045
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.41      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    3.41      SUBAREA RUNOFF(CFS) =    4.90
  EFFECTIVE AREA(ACRES) =     20.03   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.59
  TOTAL AREA(ACRES) =     20.03       PEAK FLOW RATE(CFS) =      28.89

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

****************************************************************************
  FLOW PROCESS FROM NODE LR021404.0 TO NODE LR021405.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1310.00  DOWNSTREAM(FEET) =   1295.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   295.90   CHANNEL SLOPE =  0.0507
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     28.89
  FLOW VELOCITY(FEET/SEC.) =   3.77   FLOW DEPTH(FEET) =   0.71
  TRAVEL TIME(MIN.) =   1.31   Tc(MIN.) =  13.86
```

```
  LONGEST FLOWPATH FROM NODE  21400.00 TO NODE  21405.00 =  1898.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021405.0 TO NODE LR021405.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  13.86
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.927
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        8.54      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    8.54      SUBAREA RUNOFF(CFS) =   11.37
  EFFECTIVE AREA(ACRES) =     28.57   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.59
  TOTAL AREA(ACRES) =     28.57       PEAK FLOW RATE(CFS) =      38.13

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

****************************************************************************
  FLOW PROCESS FROM NODE LR021405.0 TO NODE LR021406.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1295.00  DOWNSTREAM(FEET) =   1285.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   314.00   CHANNEL SLOPE =  0.0318
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  20.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     38.13
  FLOW VELOCITY(FEET/SEC.) =   3.12   FLOW DEPTH(FEET) =   0.78
  TRAVEL TIME(MIN.) =   1.67   Tc(MIN.) =  15.53
  LONGEST FLOWPATH FROM NODE  21400.00 TO NODE  21406.00 =  2212.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021406.0 TO NODE LR021406.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  15.53
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.800
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       26.61      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =   26.61      SUBAREA RUNOFF(CFS) =   32.36
  EFFECTIVE AREA(ACRES) =     55.18   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     55.18       PEAK FLOW RATE(CFS) =      67.21
```



```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

****************************************************************************
  FLOW PROCESS FROM NODE LR021406.0 TO NODE LR021417.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1285.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1250.00
  FLOW LENGTH(FEET) =  1395.25   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  20.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.83
  PIPE-FLOW(CFS) =     67.21
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.47    Tc(MIN.) =  17.00
  LONGEST FLOWPATH FROM NODE  21400.00 TO NODE  21417.00 =  3607.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021417.0 TO NODE LR021417.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.705
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        1.06      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.55      0.75      0.60    56
  MOBILE HOME PARK           B       12.65      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.34
  SUBAREA AREA(ACRES) =   19.26      SUBAREA RUNOFF(CFS) =   25.11
  EFFECTIVE AREA(ACRES) =     74.44   AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.53
  TOTAL AREA(ACRES) =     74.44       PEAK FLOW RATE(CFS) =      87.60

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

****************************************************************************
  FLOW PROCESS FROM NODE LR021417.0 TO NODE LR021417.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  17.00
  RAINFALL INTENSITY(INCH/HR) =   1.70
  AREA-AVERAGED Fm(INCH/HR) =  0.40
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.53
  EFFECTIVE STREAM AREA(ACRES) =    74.44
```

```
  TOTAL STREAM AREA(ACRES) =    74.44
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     87.60

****************************************************************************
  FLOW PROCESS FROM NODE LR021410.0 TO NODE LR021411.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   770.62
  ELEVATION DATA: UPSTREAM(FEET) =   1370.00  DOWNSTREAM(FEET) =   1345.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.679
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.136
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.87      0.75      0.60    56   11.68
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.17      0.75      0.70    56   12.42
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.62
  SUBAREA RUNOFF(CFS) =      7.57
  TOTAL AREA(ACRES) =      5.04   PEAK FLOW RATE(CFS) =      7.57

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

****************************************************************************
  FLOW PROCESS FROM NODE LR021411.0 TO NODE LR021412.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1345.00  DOWNSTREAM(FEET) =   1312.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   618.61   CHANNEL SLOPE =  0.0533
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      7.57
  FLOW VELOCITY(FEET/SEC.) =   2.05   FLOW DEPTH(FEET) =   0.27
  TRAVEL TIME(MIN.) =   5.03   Tc(MIN.) =  16.71
  LONGEST FLOWPATH FROM NODE  21410.00 TO NODE  21412.00 =  1389.23 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021412.0 TO NODE LR021412.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  16.71
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.723
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        7.50      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
```



```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    7.50      SUBAREA RUNOFF(CFS) =    8.60
  EFFECTIVE AREA(ACRES) =     12.54   AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.61
  TOTAL AREA(ACRES) =     12.54       PEAK FLOW RATE(CFS) =      14.30

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

****************************************************************************
  FLOW PROCESS FROM NODE LR021412.0 TO NODE LR021413.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1312.00  DOWNSTREAM(FEET) =   1300.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   262.39   CHANNEL SLOPE =  0.0457
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     14.30
  FLOW VELOCITY(FEET/SEC.) =   2.26   FLOW DEPTH(FEET) =   0.36
  TRAVEL TIME(MIN.) =   1.93   Tc(MIN.) =  18.64
  LONGEST FLOWPATH FROM NODE  21410.00 TO NODE  21413.00 =  1651.62 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021413.0 TO NODE LR021413.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  18.64
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.613
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.80      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    1.80      SUBAREA RUNOFF(CFS) =    1.89
  EFFECTIVE AREA(ACRES) =     14.34   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.61
  TOTAL AREA(ACRES) =     14.34       PEAK FLOW RATE(CFS) =      14.95

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

****************************************************************************
  FLOW PROCESS FROM NODE LR021413.0 TO NODE LR021414.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1300.00  DOWNSTREAM(FEET) =   1287.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   324.82   CHANNEL SLOPE =  0.0400
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     14.95
  FLOW VELOCITY(FEET/SEC.) =   2.17   FLOW DEPTH(FEET) =   0.37
```

```
  TRAVEL TIME(MIN.) =   2.49   Tc(MIN.) =  21.14
  LONGEST FLOWPATH FROM NODE  21410.00 TO NODE  21414.00 =  1976.44 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021414.0 TO NODE LR021414.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.14
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.496
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.90      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
  SUBAREA AREA(ACRES) =    5.90      SUBAREA RUNOFF(CFS) =    5.56
  EFFECTIVE AREA(ACRES) =     20.24   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.61
  TOTAL AREA(ACRES) =     20.24       PEAK FLOW RATE(CFS) =      19.00

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

****************************************************************************
  FLOW PROCESS FROM NODE LR021414.0 TO NODE LR021415.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1287.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1277.00
  FLOW LENGTH(FEET) =   263.30   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  36.0 INCH PIPE IS   9.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.13
  PIPE-FLOW(CFS) =     19.00
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.33    Tc(MIN.) =  21.47
  LONGEST FLOWPATH FROM NODE  21410.00 TO NODE  21415.00 =  2239.74 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021415.0 TO NODE LR021415.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  21.47
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.482
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B        0.54      0.75      0.25    56
  PUBLIC PARK                B        1.31      0.75      0.85    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.69      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
```



```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.65
  SUBAREA AREA(ACRES) =    2.54      SUBAREA RUNOFF(CFS) =    2.27
  EFFECTIVE AREA(ACRES) =     22.78   AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.61
  TOTAL AREA(ACRES) =     22.78       PEAK FLOW RATE(CFS) =      21.01

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

****************************************************************************
  FLOW PROCESS FROM NODE LR021415.0 TO NODE LR021416.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1277.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1263.00
  FLOW LENGTH(FEET) =   509.70   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  10.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.03
  PIPE-FLOW(CFS) =     21.01
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.71    Tc(MIN.) =  22.18
  LONGEST FLOWPATH FROM NODE  21410.00 TO NODE  21416.00 =  2749.44 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021416.0 TO NODE LR021416.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  22.18
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.454
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           B        2.38      0.75      0.25    56
  PUBLIC PARK                B        2.15      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.53
  SUBAREA AREA(ACRES) =    4.53      SUBAREA RUNOFF(CFS) =    4.30
  EFFECTIVE AREA(ACRES) =     27.31   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =     27.31       PEAK FLOW RATE(CFS) =      24.73

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

****************************************************************************
  FLOW PROCESS FROM NODE LR021416.0 TO NODE LR021417.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1263.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1250.00
  FLOW LENGTH(FEET) =   417.28   MANNING'S N =  0.013
```

```
  USER SPECIFIED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  10.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.09
  PIPE-FLOW(CFS) =     24.73
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.53    Tc(MIN.) =  22.71
  LONGEST FLOWPATH FROM NODE  21410.00 TO NODE  21417.00 =  3166.72 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021417.0 TO NODE LR021417.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  22.71
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.433
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.24      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.73      0.75      0.60    56
  MOBILE HOME PARK           B        0.34      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.42
  SUBAREA AREA(ACRES) =    1.31      SUBAREA RUNOFF(CFS) =    1.32
  EFFECTIVE AREA(ACRES) =     28.62   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.59
  TOTAL AREA(ACRES) =     28.62       PEAK FLOW RATE(CFS) =      25.54

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

****************************************************************************
  FLOW PROCESS FROM NODE LR021417.0 TO NODE LR021417.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  22.71
  RAINFALL INTENSITY(INCH/HR) =   1.43
  AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.59
  EFFECTIVE STREAM AREA(ACRES) =    28.62
  TOTAL STREAM AREA(ACRES) =    28.62
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     25.54

  ** CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1     87.60  17.00    1.705  0.75( 0.40) 0.53    74.4 LR021400.0
      2     25.54  22.71    1.433  0.75( 0.44) 0.59    28.6 LR021410.0

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.
```



```
  ** PEAK FLOW RATE TABLE **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    111.97  17.00    1.705  0.75( 0.41) 0.54    95.9 LR021400.0
      2     94.93  22.71    1.433  0.75( 0.41) 0.55   103.1 LR021410.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    111.97    Tc(MIN.) =    17.00
  EFFECTIVE AREA(ACRES) =    95.87   AREA-AVERAGED Fm(INCH/HR) =  0.41
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.54
  TOTAL AREA(ACRES) =    103.06
  LONGEST FLOWPATH FROM NODE  21400.00 TO NODE  21417.00 =  3607.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021417.0 TO NODE LR021418.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1250.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1218.00
  FLOW LENGTH(FEET) =  2374.87   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  51.0 INCH PIPE IS  27.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.27
  PIPE-FLOW(CFS) =    111.97
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   2.77    Tc(MIN.) =  19.77
  LONGEST FLOWPATH FROM NODE  21400.00 TO NODE  21418.00 =  5982.23 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021418.0 TO NODE LR021418.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  19.77
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.557
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.88      0.75      0.60    56
  COMMERCIAL                 B        9.63      0.75      0.10    56
  MOBILE HOME PARK           B       29.24      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.25
  SUBAREA AREA(ACRES) =   42.75      SUBAREA RUNOFF(CFS) =   52.78
  EFFECTIVE AREA(ACRES) =    138.62   AREA-AVERAGED Fm(INCH/HR) =  0.34
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.45
  TOTAL AREA(ACRES) =    145.81       PEAK FLOW RATE(CFS) =     151.99

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

****************************************************************************
  FLOW PROCESS FROM NODE LR021418.0 TO NODE LR021418.0 IS CODE =  10
```

```
------------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
==============================================================================

******************************************************************************
  FLOW PROCESS FROM NODE LR021378.0 TO NODE LR021378.0 IS CODE = 15.1
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 21378.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1365.52    Tc(MIN.) =  36.52
  AREA-AVERAGED Fm(INCH/HR) =  0.44    Ybar = 0.56
  TOTAL AREA(ACRES) =    2153.63
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21378.00 = 18071.79 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE LR021378.0 TO NODE LR021378.0 IS CODE = 14.0
------------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1365.52    Tc(MIN.) =  36.52
  AREA-AVERAGED Fm(INCH/HR) =  0.44    Ybar = 0.56
  TOTAL AREA(ACRES) =    2153.63
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21378.00 = 18071.79 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE LR021378.0 TO NODE LR021378.0 IS CODE =  12
------------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
==============================================================================

******************************************************************************
  FLOW PROCESS FROM NODE LR021378.0 TO NODE LR021418.0 IS CODE =  54
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1235.00  DOWNSTREAM(FEET) =   1218.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1235.33   CHANNEL SLOPE =  0.0138
  CHANNEL BASE(FEET) =   13.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   6.50
  CHANNEL FLOW THRU SUBAREA(CFS) =   1365.52
  FLOW VELOCITY(FEET/SEC.) =  20.61   FLOW DEPTH(FEET) =   3.36
  TRAVEL TIME(MIN.) =   1.00   Tc(MIN.) =  37.52
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21418.00 = 19307.12 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE LR021418.0 TO NODE LR021418.0 IS CODE =  81
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
  MAINLINE Tc(MIN) =  37.52
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.060
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```



```
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        7.20      0.75       0.60    56
  COMMERCIAL                 B       26.95      0.75       0.10    56
  MOBILE HOME PARK           B       13.18      0.75       0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.22
  SUBAREA AREA(ACRES) =   47.33
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.31;6H= 1.78;24H= 3.34
  S-GRAPH: VALLEY(DEV.)= 96.4%;VALLEY(UNDEV.)/DESERT=  3.6%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.63; LAG(HR) = 0.50; Fm(INCH/HR) = 0.44; Ybar = 0.56
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.90; 30M = 0.90; 1HR = 0.90;
  3HR = 0.99; 6HR = 0.99; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   2200.96
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21418.00 = 19307.12 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0329; Lca/L=0.4,n=.0295; Lca/L=0.5,n=.0271;Lca/L=0.6,n=.0253
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     293.94
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1393.54
  TOTAL AREA(ACRES) =   2200.96       PEAK FLOW RATE(CFS) =    1393.54

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

******************************************************************************
  FLOW PROCESS FROM NODE LR021418.0 TO NODE LR021418.0 IS CODE =  11
------------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
==============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     1393.54    Tc(MIN.) =  37.52
  AREA-AVERAGED Fm(INCH/HR) =  0.44    Ybar = 0.56
  TOTAL AREA(ACRES) =    2200.96
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21418.00 = 19307.12 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM     Q     Tc   Intensity   Fp(Fm)     Ap   Ae     HEADWATER
   NUMBER   (CFS) (MIN.) (INCH/HR) (INCH/HR)       (ACRES)    NODE
      1    150.95  19.95    1.549  0.75( 0.34) 0.45   138.6 LR021400.0
      2    129.16  25.78    1.328  0.75( 0.34) 0.46   145.8 LR021410.0
  LONGEST FLOWPATH FROM NODE  21400.00 TO NODE  21418.00 =  5982.23 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.31;6H= 1.78;24H= 3.33
  S-GRAPH: VALLEY(DEV.)= 96.6%;VALLEY(UNDEV.)/DESERT=  3.4%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.63; LAG(HR) = 0.50; Fm(INCH/HR) = 0.43; Ybar = 0.55
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.90; 30M = 0.90; 1HR = 0.90;
  3HR = 0.98; 6HR = 0.99; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   2346.77
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21418.00 = 19307.12 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
```

```
 Lca/L=0.3,n=.0329; Lca/L=0.4,n=.0295; Lca/L=0.5,n=.0271;Lca/L=0.6,n=.0253
 TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     315.30
 PEAK FLOW RATE(CFS) =    1482.52

****************************************************************************
 FLOW PROCESS FROM NODE LR021418.0 TO NODE LR021418.0 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE LR021418.0 TO NODE LR021419.0 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1218.00  DOWNSTREAM(FEET) =   1200.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1971.28   CHANNEL SLOPE =  0.0091
 CHANNEL BASE(FEET) =   13.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   6.50
 CHANNEL FLOW THRU SUBAREA(CFS) =   1482.52
 FLOW VELOCITY(FEET/SEC.) =  18.22   FLOW DEPTH(FEET) =   3.91
 TRAVEL TIME(MIN.) =   1.80   Tc(MIN.) =  39.33
 LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21419.00 = 21278.40 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021419.0 TO NODE LR021419.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  39.33
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.031
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       13.22      0.75      0.60    56
 COMMERCIAL                 B       80.88      0.75      0.10    56
 MOBILE HOME PARK           B       29.32      0.75      0.25    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.19
 SUBAREA AREA(ACRES) =  123.42
 UNIT-HYDROGRAPH DATA:
 RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.31;6H= 1.78;24H= 3.32
 S-GRAPH: VALLEY(DEV.)= 96.8%;VALLEY(UNDEV.)/DESERT=  3.2%
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
 Tc(HR) = 0.66; LAG(HR) = 0.52; Fm(INCH/HR) = 0.42; Ybar = 0.53
 USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
 DEPTH-AREA FACTORS: 5M = 0.89; 30M = 0.89; 1HR = 0.89;
 3HR = 0.98; 6HR = 0.99; 24HR= 1.00
 UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   2470.19
 LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21419.00 = 21278.40 FEET.
  EQUIVALENT BASIN FACTOR APPROXIMATIONS:
  Lca/L=0.3,n=.0316; Lca/L=0.4,n=.0283; Lca/L=0.5,n=.0260;Lca/L=0.6,n=.0243
 TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     340.53
 UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1541.06
 TOTAL AREA(ACRES) =   2470.19       PEAK FLOW RATE(CFS) =    1541.06
```



```
 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

****************************************************************************
 FLOW PROCESS FROM NODE LR021419.0 TO NODE LR021420.0 IS CODE =  48
----------------------------------------------------------------------------
 >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1200.00  DOWNSTREAM(FEET) =  1170.00
 FLOW LENGTH(FEET) =  3014.53   MANNING'S N =  0.014
 GIVEN BOX BASEWIDTH(FEET) =  19.00   GIVEN BOX HEIGHT(FEET) =   5.00
 *GIVEN BOX HEIGHT(FEET) =   5.00   ESTIMATED BOX BASEWIDTH(FEET) =   19.90
 ASSUME FULL-FLOWING BOX   BOX-FLOW VELOCITY(FEET/SEC.) =  15.49
 BOX-FLOW(CFS) =   1541.06
 BOX-FLOW TRAVEL TIME(MIN.) =   3.24    Tc(MIN.) =  42.57
 LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21420.00 = 24292.93 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021420.0 TO NODE LR021420.0 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN) =  42.57
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.983
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 B       73.53      0.75      0.10    56
 MOBILE HOME PARK           B       59.58      0.75      0.25    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       44.41      0.75      0.60    56
 PUBLIC PARK                B       28.10      0.75      0.85    56
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"      B       24.44      0.75      0.40    56
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        4.29      0.75      0.70    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.37
 SUBAREA AREA(ACRES) =  234.35
 UNIT-HYDROGRAPH DATA:
 RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.30;6H= 1.77;24H= 3.30
 S-GRAPH: VALLEY(DEV.)= 97.1%;VALLEY(UNDEV.)/DESERT=  2.9%
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
 Tc(HR) = 0.71; LAG(HR) = 0.57; Fm(INCH/HR) = 0.40; Ybar = 0.52
 USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
 DEPTH-AREA FACTORS: 5M = 0.88; 30M = 0.88; 1HR = 0.88;
 3HR = 0.98; 6HR = 0.99; 24HR= 0.99
 UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   2704.54
 LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21420.00 = 24292.93 FEET.
  EQUIVALENT BASIN FACTOR APPROXIMATIONS:
  Lca/L=0.3,n=.0304; Lca/L=0.4,n=.0273; Lca/L=0.5,n=.0251;Lca/L=0.6,n=.0234
 TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     379.38
 UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1576.63
 TOTAL AREA(ACRES) =   2704.54       PEAK FLOW RATE(CFS) =    1576.63

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR021420.0 TO NODE LR021421.0 IS CODE =  48
----------------------------------------------------------------------------
  >>>>>COMPUTE BOX-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED BOX SIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1170.00  DOWNSTREAM(FEET) =  1159.00
  FLOW LENGTH(FEET) =   874.60   MANNING'S N =  0.014
  GIVEN BOX BASEWIDTH(FEET) =  19.00   GIVEN BOX HEIGHT(FEET) =   5.00
  FLOWDEPTH IN BOX IS  3.65 FEET   BOX-FLOW VELOCITY(FEET/SEC.) =  22.72
  BOX-FLOW(CFS) =   1576.63
  BOX-FLOW TRAVEL TIME(MIN.) =   0.64    Tc(MIN.) =  43.21
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21421.00 = 25167.53 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021421.0 TO NODE LR021421.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  43.21
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.974
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        0.85      0.75       0.85    56
  COMMERCIAL                 B        0.87      0.75       0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.17      0.75       0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.48
  SUBAREA AREA(ACRES) =    1.89
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.80;3H= 1.30;6H= 1.77;24H= 3.30
  S-GRAPH: VALLEY(DEV.)= 97.1%;VALLEY(UNDEV.)/DESERT=  2.9%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.72; LAG(HR) = 0.58; Fm(INCH/HR) = 0.40; Ybar = 0.52
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.88; 30M = 0.88; 1HR = 0.88;
  3HR = 0.98; 6HR = 0.99; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =   2706.43
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21421.00 = 25167.53 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0300; Lca/L=0.4,n=.0269; Lca/L=0.5,n=.0247;Lca/L=0.6,n=.0230
  TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =     379.65
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   1556.17
  TOTAL AREA(ACRES) =   2706.43       PEAK FLOW RATE(CFS) =    1576.63
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

****************************************************************************
  FLOW PROCESS FROM NODE LR021421.0 TO NODE LR021421.0 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================
```



```
****************************************************************************
  FLOW PROCESS FROM NODE LR021070.0 TO NODE LR021070.0 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 21070.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     3420.49    Tc(MIN.) =  66.26
  AREA-AVERAGED Fm(INCH/HR) =  0.50    Ybar = 0.58
  TOTAL AREA(ACRES) =   11023.91
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21070.00 = 47862.35 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021070.0 TO NODE LR021070.0 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     3420.49    Tc(MIN.) =  66.26
  AREA-AVERAGED Fm(INCH/HR) =  0.50    Ybar = 0.58
  TOTAL AREA(ACRES) =   11023.91
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21070.00 = 47862.35 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021070.0 TO NODE LR021070.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021070.0 TO NODE LR021421.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1183.00  DOWNSTREAM(FEET) =   1159.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1867.34   CHANNEL SLOPE =  0.0129
  CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   3420.49
  FLOW VELOCITY(FEET/SEC.) =  25.10   FLOW DEPTH(FEET) =   4.65
  TRAVEL TIME(MIN.) =   1.24   Tc(MIN.) =  67.50
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21421.00 = 49729.69 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021421.0 TO NODE LR021421.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  67.50
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.745
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       51.49      0.75       0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.09      0.75       0.60    56
```

```
  PUBLIC PARK                B        3.37      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.18
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =   59.95
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.81;3H= 1.42;6H= 2.03;24H= 4.14
  S-GRAPH: VALLEY(DEV.)= 71.9%;VALLEY(UNDEV.)/DESERT= 28.1%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 1.13; LAG(HR) = 0.90; Fm(INCH/HR) = 0.49; Ybar = 0.58
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.65; 30M = 0.66; 1HR = 0.67;
  3HR = 0.94; 6HR = 0.97; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  11083.86
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21421.00 = 49729.69 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0298; Lca/L=0.4,n=.0267; Lca/L=0.5,n=.0245;Lca/L=0.6,n=.0229
  TIME OF PEAK FLOW(HR) = 16.92  RUNOFF VOLUME(AF) =    1638.11
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   3390.49
  TOTAL AREA(ACRES) =  11083.86       PEAK FLOW RATE(CFS) =    3420.49
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

****************************************************************************
  FLOW PROCESS FROM NODE LR021421.0 TO NODE LR021421.0 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     3420.49    Tc(MIN.) =  67.50
  AREA-AVERAGED Fm(INCH/HR) =  0.49    Ybar = 0.58
  TOTAL AREA(ACRES) =   11083.86
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21421.00 = 49729.69 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     1576.63    Tc(MIN.) =  43.21
  AREA-AVERAGED Fm(INCH/HR) =  0.40    Ybar = 0.52
  TOTAL AREA(ACRES) =    2706.43
  LONGEST FLOWPATH FROM NODE  21100.00 TO NODE  21421.00 = 25167.53 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.81;3H= 1.39;6H= 1.98;24H= 3.97
  S-GRAPH: VALLEY(DEV.)= 76.8%;VALLEY(UNDEV.)/DESERT= 23.2%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 1.13; LAG(HR) = 0.90; Fm(INCH/HR) = 0.48; Ybar = 0.57
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.61; 30M = 0.63; 1HR = 0.63;
  3HR = 0.92; 6HR = 0.96; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  13790.29
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21421.00 = 49729.69 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0298; Lca/L=0.4,n=.0267; Lca/L=0.5,n=.0245;Lca/L=0.6,n=.0229
  TIME OF PEAK FLOW(HR) = 16.92  RUNOFF VOLUME(AF) =    1990.10
```



```
  PEAK FLOW RATE(CFS) =    4053.74

****************************************************************************
  FLOW PROCESS FROM NODE LR021421.0 TO NODE LR021421.0 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE LR021421.0 TO NODE LR021422.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1159.00  DOWNSTREAM(FEET) =   1153.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   938.13   CHANNEL SLOPE =  0.0064
  CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   4053.74
  FLOW VELOCITY(FEET/SEC.) =  20.53   FLOW DEPTH(FEET) =   6.12
  TRAVEL TIME(MIN.) =   0.76   Tc(MIN.) =  68.27
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21422.00 = 50667.82 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021422.0 TO NODE LR021422.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  68.27
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.740
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       65.40      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.90      0.75      0.60    56
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B        4.85      0.75      0.20    56
  PUBLIC PARK                B        2.00      0.75      0.85    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B       47.14      0.75      0.40    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.24
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =  121.29
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.81;3H= 1.39;6H= 1.98;24H= 3.97
  S-GRAPH: VALLEY(DEV.)= 77.0%;VALLEY(UNDEV.)/DESERT= 23.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 1.14; LAG(HR) = 0.91; Fm(INCH/HR) = 0.47; Ybar = 0.57
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.61; 30M = 0.62; 1HR = 0.63;
  3HR = 0.92; 6HR = 0.96; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  13911.58
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21422.00 = 50667.82 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0296; Lca/L=0.4,n=.0266; Lca/L=0.5,n=.0244;Lca/L=0.6,n=.0228
```

```
  TIME OF PEAK FLOW(HR) = 16.92  RUNOFF VOLUME(AF) =    2013.70
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   4040.25
  TOTAL AREA(ACRES) =  13911.58       PEAK FLOW RATE(CFS) =    4053.74
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

****************************************************************************
  FLOW PROCESS FROM NODE LR021422.0 TO NODE LR021423.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1153.00  DOWNSTREAM(FEET) =   1148.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   670.94   CHANNEL SLOPE =  0.0075
  CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   4053.74
  FLOW VELOCITY(FEET/SEC.) =  21.68   FLOW DEPTH(FEET) =   5.89
  TRAVEL TIME(MIN.) =   0.52   Tc(MIN.) =  68.78
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21423.00 = 51338.76 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021423.0 TO NODE LR021423.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  68.78
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.737
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.99      0.75      0.60    56
  COMMERCIAL                 B       11.78      0.75      0.10    56
  MOBILE HOME PARK           B        4.78      0.75      0.25    56
  PUBLIC PARK                B        1.74      0.75      0.85    56
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B        0.99      0.75      0.20    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.25
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =   21.28
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.81;3H= 1.39;6H= 1.98;24H= 3.96
  S-GRAPH: VALLEY(DEV.)= 77.0%;VALLEY(UNDEV.)/DESERT= 23.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 1.15; LAG(HR) = 0.92; Fm(INCH/HR) = 0.47; Ybar = 0.57
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.60; 30M = 0.62; 1HR = 0.63;
  3HR = 0.92; 6HR = 0.96; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  13932.86
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21423.00 = 51338.76 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0295; Lca/L=0.4,n=.0264; Lca/L=0.5,n=.0243;Lca/L=0.6,n=.0227
  TIME OF PEAK FLOW(HR) = 16.92  RUNOFF VOLUME(AF) =    2017.81
```



```
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   4009.60
  TOTAL AREA(ACRES) =  13932.86       PEAK FLOW RATE(CFS) =    4053.74
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

****************************************************************************
  FLOW PROCESS FROM NODE LR021423.0 TO NODE LR021439.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1148.00  DOWNSTREAM(FEET) =   1143.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   702.31   CHANNEL SLOPE =  0.0071
  CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   4053.74
  FLOW VELOCITY(FEET/SEC.) =  21.33   FLOW DEPTH(FEET) =   5.96
  TRAVEL TIME(MIN.) =   0.55   Tc(MIN.) =  69.33
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21439.00 = 52041.07 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021439.0 TO NODE LR021439.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  69.33
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.734
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.52      0.75      0.60    56
  PUBLIC PARK                B        1.21      0.75      0.85    56
  MOBILE HOME PARK           B        4.21      0.75      0.25    56
  SCHOOL                     B        0.18      0.75      0.60    56
  COMMERCIAL                 B        0.96      0.75      0.10    56
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B        0.39      0.75      0.20    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.36
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =    7.47
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.81;3H= 1.39;6H= 1.98;24H= 3.96
  S-GRAPH: VALLEY(DEV.)= 77.1%;VALLEY(UNDEV.)/DESERT= 22.9%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 1.16; LAG(HR) = 0.92; Fm(INCH/HR) = 0.47; Ybar = 0.57
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.60; 30M = 0.62; 1HR = 0.63;
  3HR = 0.92; 6HR = 0.96; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  13940.33
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21439.00 = 52041.07 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0294; Lca/L=0.4,n=.0263; Lca/L=0.5,n=.0242;Lca/L=0.6,n=.0226
  TIME OF PEAK FLOW(HR) = 17.00  RUNOFF VOLUME(AF) =    2019.04
```

```
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   4014.85
  TOTAL AREA(ACRES) =  13940.33       PEAK FLOW RATE(CFS) =    4053.74
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

****************************************************************************
  FLOW PROCESS FROM NODE LR021439.0 TO NODE LR021439.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =    4053.74    Tc(MIN.) =  69.33
  AREA-AVERAGED Fm(INCH/HR) =  0.47   Ybar = 0.57
  TOTAL AREA(ACRES) =   13940.33

****************************************************************************
  FLOW PROCESS FROM NODE LR021430.0 TO NODE LR021431.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   200.00
  ELEVATION DATA: UPSTREAM(FEET) =   1220.00  DOWNSTREAM(FEET) =   1214.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.103
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.510
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.20      0.75      0.50    56    6.53
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.38      0.75      0.60    56    6.92
  COMMERCIAL                 B        3.33      0.75      0.10    56    5.10
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.31
  SUBAREA RUNOFF(CFS) =     17.42
  TOTAL AREA(ACRES) =      5.91   PEAK FLOW RATE(CFS) =     17.42

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

****************************************************************************
  FLOW PROCESS FROM NODE LR021431.0 TO NODE LR021432.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1214.00  DOWNSTREAM ELEVATION(FEET) = 1209.00
  STREET LENGTH(FEET) =   286.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
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  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.03

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      26.39
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.53
    HALFSTREET FLOOD WIDTH(FEET) =   18.63
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.60
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.91
  STREET FLOW TRAVEL TIME(MIN.) =   1.32   Tc(MIN.) =   6.43
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.056
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.32      0.75      0.50    56
  COMMERCIAL                 B        5.86      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.61      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.16
  SUBAREA AREA(ACRES) =     6.79      SUBAREA RUNOFF(CFS) =   17.93
  EFFECTIVE AREA(ACRES) =     12.70    AREA-AVERAGED Fm(INCH/HR) =  0.18
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.23
  TOTAL AREA(ACRES) =     12.70        PEAK FLOW RATE(CFS) =      32.93

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.56   HALFSTREET FLOOD WIDTH(FEET) =  20.29
  FLOW VELOCITY(FEET/SEC.) =  3.82   DEPTH*VELOCITY(FT*FT/SEC.) =   2.16
  LONGEST FLOWPATH FROM NODE  21430.00 TO NODE  21432.00 =   486.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021432.0 TO NODE LR021433.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1209.00  DOWNSTREAM ELEVATION(FEET) = 1206.00
  STREET LENGTH(FEET) =   254.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07
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  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      40.91
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.64
  HALFSTREET FLOOD WIDTH(FEET) =   23.88
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.47
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.21
 STREET FLOW TRAVEL TIME(MIN.) =   1.22   Tc(MIN.) =   7.65
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.754
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        0.33      0.75      0.50    56
 COMMERCIAL                 B        5.82      0.75      0.10    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.58      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.16
 SUBAREA AREA(ACRES) =    6.73      SUBAREA RUNOFF(CFS) =   15.94
 EFFECTIVE AREA(ACRES) =     19.43    AREA-AVERAGED Fm(INCH/HR) =  0.16
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.21
 TOTAL AREA(ACRES) =     19.43        PEAK FLOW RATE(CFS) =      45.42

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.66   HALFSTREET FLOOD WIDTH(FEET) =  24.90
 FLOW VELOCITY(FEET/SEC.) =  3.55   DEPTH*VELOCITY(FT*FT/SEC.) =   2.33
 LONGEST FLOWPATH FROM NODE  21430.00 TO NODE  21433.00 =   740.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021433.0 TO NODE LR021434.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1206.00  DOWNSTREAM ELEVATION(FEET) = 1202.00
 STREET LENGTH(FEET) =   349.00   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 39.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      55.86
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.70
  HALFSTREET FLOOD WIDTH(FEET) =   28.75
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.70
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.59
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 STREET FLOW TRAVEL TIME(MIN.) =   1.57   Tc(MIN.) =   9.22
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.461
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        0.43      0.75      0.50    56
 COMMERCIAL                 B        8.62      0.75      0.10    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.86      0.75      0.60    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.16
 SUBAREA AREA(ACRES) =    9.91      SUBAREA RUNOFF(CFS) =   20.88
 EFFECTIVE AREA(ACRES) =     29.34    AREA-AVERAGED Fm(INCH/HR) =  0.14
 AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.19
 TOTAL AREA(ACRES) =     29.34        PEAK FLOW RATE(CFS) =      61.18

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.72   HALFSTREET FLOOD WIDTH(FEET) =  30.78
 FLOW VELOCITY(FEET/SEC.) =  3.75   DEPTH*VELOCITY(FT*FT/SEC.) =   2.70
 LONGEST FLOWPATH FROM NODE  21430.00 TO NODE  21434.00 =  1089.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE LR021434.0 TO NODE LR021435.0 IS CODE =  63
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1202.00  DOWNSTREAM ELEVATION(FEET) = 1195.00
 STREET LENGTH(FEET) =   602.00   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 39.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
 MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      78.52
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.77
  HALFSTREET FLOOD WIDTH(FEET) =   36.10
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.95
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.06
 STREET FLOW TRAVEL TIME(MIN.) =   2.54   Tc(MIN.) =  11.76
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.127
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        0.83      0.75      0.50    56
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  COMMERCIAL                  B       16.10      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        2.38      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.18
  SUBAREA AREA(ACRES) =   19.31      SUBAREA RUNOFF(CFS) =   34.64
  EFFECTIVE AREA(ACRES) =     48.65    AREA-AVERAGED Fm(INCH/HR) =  0.14
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.19
  TOTAL AREA(ACRES) =     48.65        PEAK FLOW RATE(CFS) =      87.00

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.80   HALFSTREET FLOOD WIDTH(FEET) =  38.44
  FLOW VELOCITY(FEET/SEC.) =  4.02   DEPTH*VELOCITY(FT*FT/SEC.) =   3.21
  LONGEST FLOWPATH FROM NODE  21430.00 TO NODE  21435.00 =  1691.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021435.0 TO NODE LR021436.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 14 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1195.00  DOWNSTREAM ELEVATION(FEET) = 1183.00
  STREET LENGTH(FEET) =   889.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 39.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   1.07

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     111.47
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.84
    HALFSTREET FLOOD WIDTH(FEET) =   42.50
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.48
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.75
  STREET FLOW TRAVEL TIME(MIN.) =   3.31   Tc(MIN.) =  15.07
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.833
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        2.44      0.75      0.60    56
  COMMERCIAL                  B       28.76      0.75      0.10    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"        B        0.28      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.14
  SUBAREA AREA(ACRES) =   31.48      SUBAREA RUNOFF(CFS) =   48.91
  EFFECTIVE AREA(ACRES) =     80.13    AREA-AVERAGED Fm(INCH/HR) =  0.13
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  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.17
  TOTAL AREA(ACRES) =     80.13        PEAK FLOW RATE(CFS) =     123.02

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.86   HALFSTREET FLOOD WIDTH(FEET) =  44.85
  FLOW VELOCITY(FEET/SEC.) =  4.56   DEPTH*VELOCITY(FT*FT/SEC.) =   3.93
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  889.5 FT WITH ELEVATION-DROP =  12.0 FT, IS   60.1 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21436.00
  LONGEST FLOWPATH FROM NODE  21430.00 TO NODE  21436.00 =  2580.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021436.0 TO NODE LR021437.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1183.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1172.00
  FLOW LENGTH(FEET) =   717.00   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  25.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.32
  PIPE-FLOW(CFS) =    123.02
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.83    Tc(MIN.) =  15.90
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.775
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                  B       22.52      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        4.08      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.18
  SUBAREA AREA(ACRES) =   26.60      SUBAREA RUNOFF(CFS) =   39.33
  EFFECTIVE AREA(ACRES) =    106.73    AREA-AVERAGED Fm(INCH/HR) =  0.13
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.17
  TOTAL AREA(ACRES) =    106.73        PEAK FLOW RATE(CFS) =    158.17

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 39.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
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  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   35.15
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.59
    HALFSTREET FLOOD WIDTH(FEET) =   21.38
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.69
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.16
  LONGEST FLOWPATH FROM NODE  21430.00 TO NODE  21437.00 =  3297.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021437.0 TO NODE LR021438.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1172.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1157.00
  FLOW LENGTH(FEET) =  1061.00   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  30.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.86
  PIPE-FLOW(CFS) =    158.17
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   1.19    Tc(MIN.) =  17.08
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.700
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        0.28      0.63      1.00    65
  COMMERCIAL                 B       35.84      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.10      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.17
  SUBAREA AREA(ACRES) =   41.22      SUBAREA RUNOFF(CFS) =   58.43
  EFFECTIVE AREA(ACRES) =    147.95    AREA-AVERAGED Fm(INCH/HR) =  0.13
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.17
  TOTAL AREA(ACRES) =    147.95        PEAK FLOW RATE(CFS) =    209.40

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 39.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   51.23
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.66
    HALFSTREET FLOOD WIDTH(FEET) =   25.21
```



```
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.91
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.59
  LONGEST FLOWPATH FROM NODE  21430.00 TO NODE  21438.00 =  4358.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021438.0 TO NODE LR021439.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1157.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1143.00
  FLOW LENGTH(FEET) =   895.00   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  35.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.62
  PIPE-FLOW(CFS) =    209.40
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.90    Tc(MIN.) =  17.99
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.648
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        0.33      0.63      1.00    65
  COMMERCIAL                 B       21.36      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.94      0.75      0.60    56
  MOBILE HOME PARK           B        2.98      0.75      0.25    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.19
  SUBAREA AREA(ACRES) =   28.61      SUBAREA RUNOFF(CFS) =   38.72
  EFFECTIVE AREA(ACRES) =    176.56    AREA-AVERAGED Fm(INCH/HR) =  0.13
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.17
  TOTAL AREA(ACRES) =    176.56        PEAK FLOW RATE(CFS) =    241.24

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  8.0       STREET HALFWIDTH(FEET) = 39.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.87
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  STREETFLOW HYDRAULICS BASED ON MAINLINE Tc :
  STREET HYDRAULICS COMPUTED USING ESTIMATED FLOW(CFS) =   31.84
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.57
    HALFSTREET FLOOD WIDTH(FEET) =   20.52
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.62
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.06
  LONGEST FLOWPATH FROM NODE  21430.00 TO NODE  21439.00 =  5253.50 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE LR021439.0 TO NODE LR021439.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  17.99
  RAINFALL INTENSITY(INCH/HR) =   1.65
  AREA-AVERAGED Fm(INCH/HR) =  0.13
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.17
  EFFECTIVE STREAM AREA(ACRES) =   176.56
  TOTAL STREAM AREA(ACRES) =   176.56
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    241.24
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1      4053.74   69.33    13940.33  LR020120.0
     2       241.24   17.99      176.56  LR021430.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.81;3H= 1.39;6H= 1.97;24H= 3.95
  S-GRAPH: VALLEY(DEV.)= 77.3%;VALLEY(UNDEV.)/DESERT= 22.7%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 1.16; LAG(HR) = 0.92; Fm(INCH/HR) = 0.47; Ybar = 0.56
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.60; 30M = 0.62; 1HR = 0.63;
  3HR = 0.92; 6HR = 0.96; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  14116.89
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21439.00 = 52041.07 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0294; Lca/L=0.4,n=.0263; Lca/L=0.5,n=.0242;Lca/L=0.6,n=.0226
  TIME OF PEAK FLOW(HR) = 17.00  RUNOFF VOLUME(AF) =    2056.29
  PEAK FLOW RATE(CFS) =   4076.17

****************************************************************************
  FLOW PROCESS FROM NODE LR021439.0 TO NODE LR021443.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1143.00  DOWNSTREAM(FEET) =   1135.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1468.88   CHANNEL SLOPE =  0.0054
  CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   4076.17
  FLOW VELOCITY(FEET/SEC.) =  19.39   FLOW DEPTH(FEET) =   6.41
  TRAVEL TIME(MIN.) =   1.26   Tc(MIN.) =  70.59
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21443.00 = 53509.95 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021443.0 TO NODE LR021443.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
```



```
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =    4076.17    Tc(MIN.) =  70.59
  AREA-AVERAGED Fm(INCH/HR) =  0.47   Ybar = 0.56
  TOTAL AREA(ACRES) =   14116.89

****************************************************************************
  FLOW PROCESS FROM NODE LR021440.0 TO NODE LR021441.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   665.71
  ELEVATION DATA: UPSTREAM(FEET) =   1142.00  DOWNSTREAM(FEET) =   1138.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.137
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.087
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
        LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  MOBILE HOME PARK           B        6.41      0.75       0.25    56   12.59
  PUBLIC PARK                B        0.38      0.75       0.85    56   18.09
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.07      0.75       0.60    56   15.43
  SCHOOL                     B        0.09      0.75       0.60    56   15.43
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B        0.25      0.75       0.20    56   12.14
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.29
  SUBAREA RUNOFF(CFS) =     12.13
  TOTAL AREA(ACRES) =      7.20   PEAK FLOW RATE(CFS) =     12.13

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

****************************************************************************
  FLOW PROCESS FROM NODE LR021441.0 TO NODE LR021442.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1138.00  DOWNSTREAM ELEVATION(FEET) = 1136.00
  STREET LENGTH(FEET) =   701.10   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      23.70
```

```
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.62
    HALFSTREET FLOOD WIDTH(FEET) =   24.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.93
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.20
  STREET FLOW TRAVEL TIME(MIN.) =   6.04   Tc(MIN.) =  18.18
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.638
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        1.22      0.75      0.85    56
  MOBILE HOME PARK           B       16.66      0.75      0.25    56
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B        0.05      0.75      0.20    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.29
  SUBAREA AREA(ACRES) =   17.93      SUBAREA RUNOFF(CFS) =   22.92
  EFFECTIVE AREA(ACRES) =     25.13    AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.29
  TOTAL AREA(ACRES) =     25.13        PEAK FLOW RATE(CFS) =      32.14

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.68   HALFSTREET FLOOD WIDTH(FEET) =  26.93
  FLOW VELOCITY(FEET/SEC.) =  2.11   DEPTH*VELOCITY(FT*FT/SEC.) =   1.43
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  701.1 FT WITH ELEVATION-DROP =   2.0 FT, IS   26.9 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  21442.00
  LONGEST FLOWPATH FROM NODE  21440.00 TO NODE  21442.00 =  1366.81 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021442.0 TO NODE LR021443.0 IS CODE =  42
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1136.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1135.00
  FLOW LENGTH(FEET) =   150.38   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  19.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.02
  PIPE-FLOW(CFS) =     32.14
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =  18.49
  LONGEST FLOWPATH FROM NODE  21440.00 TO NODE  21443.00 =  1517.19 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021443.0 TO NODE LR021443.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
```



```
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  18.49
  RAINFALL INTENSITY(INCH/HR) =   1.62
  AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.29
  EFFECTIVE STREAM AREA(ACRES) =    25.13
  TOTAL STREAM AREA(ACRES) =    25.13
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     32.14
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1      4076.17   70.59    14116.89  LR020120.0
     2        32.14   18.49       25.13  LR021440.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.81;3H= 1.39;6H= 1.97;24H= 3.95
  S-GRAPH: VALLEY(DEV.)= 77.4%;VALLEY(UNDEV.)/DESERT= 22.6%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 1.18; LAG(HR) = 0.94; Fm(INCH/HR) = 0.47; Ybar = 0.56
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.60; 30M = 0.62; 1HR = 0.63;
  3HR = 0.92; 6HR = 0.96; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  14142.02
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21443.00 = 53509.95 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0291; Lca/L=0.4,n=.0261; Lca/L=0.5,n=.0240;Lca/L=0.6,n=.0224
  TIME OF PEAK FLOW(HR) = 17.00  RUNOFF VOLUME(AF) =    2060.86
  PEAK FLOW RATE(CFS) =   4099.46

****************************************************************************
  FLOW PROCESS FROM NODE LR021443.0 TO NODE LR021453.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1135.00  DOWNSTREAM(FEET) =   1118.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1571.70   CHANNEL SLOPE =  0.0108
  CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   4099.46
  FLOW VELOCITY(FEET/SEC.) =  24.86   FLOW DEPTH(FEET) =   5.37
  TRAVEL TIME(MIN.) =   1.05   Tc(MIN.) =  71.65
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21453.00 = 55081.64 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021453.0 TO NODE LR021453.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =    4099.46    Tc(MIN.) =  71.65
  AREA-AVERAGED Fm(INCH/HR) =  0.47   Ybar = 0.56
  TOTAL AREA(ACRES) =   14142.02

****************************************************************************
```

```
  FLOW PROCESS FROM NODE LR021450.0 TO NODE LR021451.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   526.00
  ELEVATION DATA: UPSTREAM(FEET) =   1132.00  DOWNSTREAM(FEET) =   1128.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.927
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.223
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  MOBILE HOME PARK           B        3.07      0.75       0.25    56   10.93
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.25
  SUBAREA RUNOFF(CFS) =      5.62
  TOTAL AREA(ACRES) =      3.07   PEAK FLOW RATE(CFS) =      5.62

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

****************************************************************************
  FLOW PROCESS FROM NODE LR021451.0 TO NODE LR021452.0 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1128.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1119.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   853.42
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.839
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.02      0.75       0.90    56
  MOBILE HOME PARK           B       18.33      0.75       0.25    56
  PUBLIC PARK                B        0.30      0.75       0.85    56
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B        0.28      0.75       0.20    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.26
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     19.47
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.51
  AVERAGE FLOW DEPTH(FEET) =   0.61   FLOOD WIDTH(FEET) =   33.99
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   4.05   Tc(MIN.) =  14.98
  SUBAREA AREA(ACRES) =   18.93       SUBAREA RUNOFF(CFS) =   28.03
  EFFECTIVE AREA(ACRES) =   22.00     AREA-AVERAGED Fm(INCH/HR) =   0.19
  AREA-AVERAGED Fp(INCH/HR) =   0.75  AREA-AVERAGED Ap =   0.26
  TOTAL AREA(ACRES) =     22.00         PEAK FLOW RATE(CFS) =      32.60

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12
```



```
  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.69   FLOOD WIDTH(FEET) =   43.10
  FLOW VELOCITY(FEET/SEC.) =   3.82   DEPTH*VELOCITY(FT*FT/SEC) =   2.64
  LONGEST FLOWPATH FROM NODE  21450.00 TO NODE  21452.00 =  1379.42 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021452.0 TO NODE LR021453.0 IS CODE =  33
----------------------------------------------------------------------------
  >>>>>COMPUTE COUPLED PIPEFLOW/STREETFLOW THRU SUBAREA<<<<<
  >>USING USER-SPECIFIED PIPESIZE(PARALLEL/REPLACEMENT PIPESIZE ESTIMATED)<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =  1119.00
  DOWNSTREAM NODE ELEVATION(FEET) =  1118.00
  FLOW LENGTH(FEET) =   197.38   MANNING'S N =  0.013

  USER SPECIFIED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  21.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.24
  PIPE-FLOW(CFS) =     32.60
  *NOTE: USER SPECIFIED PIPE SYSTEM CAN CARRY TOTAL UPSTREAM FLOW*
  PIPEFLOW TRAVEL TIME(MIN.) =   0.48    Tc(MIN.) =  15.46
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.805
  SUBAREA AREA(ACRES) =    0.00      SUBAREA RUNOFF(CFS) =    0.00
  EFFECTIVE AREA(ACRES) =     22.00    AREA-AVERAGED Fm(INCH/HR) =  0.19
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.26
  TOTAL AREA(ACRES) =     22.00        PEAK FLOW RATE(CFS) =     32.60
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

  STREET CROSS-SECTION INFORMATION:
  CURB HEIGHT(INCHES) =  6.0       STREET HALFWIDTH(FEET) = 18.00
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.70
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  *NOTE: ESTIMATED PEAK FLOW DEFAULTED TO UPSTREAM PEAK FLOW;
         STREET HYDRAULICS NOT COMPUTED*
  LONGEST FLOWPATH FROM NODE  21450.00 TO NODE  21453.00 =  1576.80 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021453.0 TO NODE LR021453.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.46
  RAINFALL INTENSITY(INCH/HR) =   1.80
  AREA-AVERAGED Fm(INCH/HR) =  0.19
```

```
  AREA-AVERAGED Fp(INCH/HR) =  0.75
  AREA-AVERAGED Ap =  0.26
  EFFECTIVE STREAM AREA(ACRES) =    22.00
  TOTAL STREAM AREA(ACRES) =    22.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     32.60
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1      4099.46   71.65    14142.02  LR020120.0
     2        32.60   15.46       22.00  LR021450.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.81;3H= 1.39;6H= 1.97;24H= 3.95
  S-GRAPH: VALLEY(DEV.)= 77.4%;VALLEY(UNDEV.)/DESERT= 22.6%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 1.19; LAG(HR) = 0.96; Fm(INCH/HR) = 0.47; Ybar = 0.56
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.60; 30M = 0.62; 1HR = 0.63;
  3HR = 0.92; 6HR = 0.96; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  14164.02
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21453.00 = 55081.64 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0288; Lca/L=0.4,n=.0258; Lca/L=0.5,n=.0237;Lca/L=0.6,n=.0221
  TIME OF PEAK FLOW(HR) = 17.00  RUNOFF VOLUME(AF) =    2065.02
  PEAK FLOW RATE(CFS) =   4101.54

****************************************************************************
  FLOW PROCESS FROM NODE LR021453.0 TO NODE LR021469.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1118.00  DOWNSTREAM(FEET) =   1117.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   519.47   CHANNEL SLOPE =  0.0019
  CHANNEL BASE(FEET) =   22.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =  11.50
  CHANNEL FLOW THRU SUBAREA(CFS) =   4101.54
  FLOW VELOCITY(FEET/SEC.) =  13.24   FLOW DEPTH(FEET) =   8.11
  TRAVEL TIME(MIN.) =   0.65   Tc(MIN.) =  72.30
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21469.00 = 55601.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021469.0 TO NODE LR021469.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  PEAK FLOW RATE(CFS) =    4101.54    Tc(MIN.) =  72.30
  AREA-AVERAGED Fm(INCH/HR) =  0.47   Ybar = 0.56
  TOTAL AREA(ACRES) =   14164.02

****************************************************************************
  FLOW PROCESS FROM NODE LR021460.0 TO NODE LR021461.0 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
```



```
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   626.73
  ELEVATION DATA: UPSTREAM(FEET) =   1222.00  DOWNSTREAM(FEET) =   1219.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.633
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.141
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.48      0.75      0.60    56   15.77
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        5.98      0.75      0.50    56   14.89
  COMMERCIAL                 B        1.53      0.75      0.10    56   11.63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.46
  SUBAREA RUNOFF(CFS) =     16.13
  TOTAL AREA(ACRES) =      9.99   PEAK FLOW RATE(CFS) =     16.13

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

****************************************************************************
  FLOW PROCESS FROM NODE LR021461.0 TO NODE LR021462.0 IS CODE =  63
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1219.00  DOWNSTREAM ELEVATION(FEET) = 1216.00
  STREET LENGTH(FEET) =   478.63   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
  MAXIMUM ALLOWABLE STREET FLOW DEPTH(FEET) =   0.90

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      20.48
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.53
    HALFSTREET FLOOD WIDTH(FEET) =   19.66
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.42
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.29
  STREET FLOW TRAVEL TIME(MIN.) =   3.30   Tc(MIN.) =  14.93
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.843
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        6.46      0.75      0.50    56
  COMMERCIAL                 B        0.09      0.75      0.10    56
```

```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.49
  SUBAREA AREA(ACRES) =    6.55      SUBAREA RUNOFF(CFS) =    8.68
  EFFECTIVE AREA(ACRES) =     16.54    AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.48
  TOTAL AREA(ACRES) =     16.54        PEAK FLOW RATE(CFS) =      22.14

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.54   HALFSTREET FLOOD WIDTH(FEET) =  20.21
  FLOW VELOCITY(FEET/SEC.) =  2.49   DEPTH*VELOCITY(FT*FT/SEC.) =   1.35
  LONGEST FLOWPATH FROM NODE  21460.00 TO NODE  21462.00 =  1105.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021462.0 TO NODE LR021463.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1216.00  DOWNSTREAM(FEET) =   1211.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   268.66   CHANNEL SLOPE =  0.0186
  CHANNEL BASE(FEET) =    2.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   4.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     22.14
  FLOW VELOCITY(FEET/SEC.) =   8.43   FLOW DEPTH(FEET) =   0.75
  TRAVEL TIME(MIN.) =   0.53   Tc(MIN.) =  15.46
  LONGEST FLOWPATH FROM NODE  21460.00 TO NODE  21463.00 =  1374.02 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021463.0 TO NODE LR021463.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  15.46
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.805
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.34      0.75      0.60    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        8.08      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =    8.42      SUBAREA RUNOFF(CFS) =   10.82
  EFFECTIVE AREA(ACRES) =     24.96   AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.49
  TOTAL AREA(ACRES) =     24.96       PEAK FLOW RATE(CFS) =      32.39

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

****************************************************************************
  FLOW PROCESS FROM NODE LR021463.0 TO NODE LR021464.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```



```
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1211.00  DOWNSTREAM(FEET) =   1205.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   384.00   CHANNEL SLOPE =  0.0156
  CHANNEL BASE(FEET) =    2.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   4.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     32.39
  FLOW VELOCITY(FEET/SEC.) =   8.73   FLOW DEPTH(FEET) =   0.95
  TRAVEL TIME(MIN.) =   0.73   Tc(MIN.) =  16.19
  LONGEST FLOWPATH FROM NODE  21460.00 TO NODE  21464.00 =  1758.02 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021464.0 TO NODE LR021464.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  16.19
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.755
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        6.76      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =    6.76      SUBAREA RUNOFF(CFS) =    8.40
  EFFECTIVE AREA(ACRES) =     31.72   AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.49
  TOTAL AREA(ACRES) =     31.72       PEAK FLOW RATE(CFS) =      39.68

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

****************************************************************************
  FLOW PROCESS FROM NODE LR021464.0 TO NODE LR021465.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1205.00  DOWNSTREAM(FEET) =   1197.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   540.00   CHANNEL SLOPE =  0.0148
  CHANNEL BASE(FEET) =    2.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   4.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     39.68
  FLOW VELOCITY(FEET/SEC.) =   9.04   FLOW DEPTH(FEET) =   1.06
  TRAVEL TIME(MIN.) =   1.00   Tc(MIN.) =  17.19
  LONGEST FLOWPATH FROM NODE  21460.00 TO NODE  21465.00 =  2298.02 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021465.0 TO NODE LR021465.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  17.19
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.694
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  COMMERCIAL                  B        0.08      0.75      0.10    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"        B        7.60      0.75      0.50    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =    7.68      SUBAREA RUNOFF(CFS) =    9.14
  EFFECTIVE AREA(ACRES) =     39.40   AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.49
  TOTAL AREA(ACRES) =     39.40       PEAK FLOW RATE(CFS) =      47.06

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

****************************************************************************
  FLOW PROCESS FROM NODE LR021465.0 TO NODE LR021466.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1197.00  DOWNSTREAM(FEET) =   1187.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   678.50   CHANNEL SLOPE =  0.0147
  CHANNEL BASE(FEET) =    2.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   4.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     47.06
  FLOW VELOCITY(FEET/SEC.) =   9.43   FLOW DEPTH(FEET) =   1.16
  TRAVEL TIME(MIN.) =   1.20   Tc(MIN.) =  18.39
  LONGEST FLOWPATH FROM NODE  21460.00 TO NODE  21466.00 =  2976.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021466.0 TO NODE LR021466.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  18.39
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.627
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                  B        0.26      0.75      0.10    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"        B        8.00      0.75      0.50    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.11      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.49
  SUBAREA AREA(ACRES) =    8.37      SUBAREA RUNOFF(CFS) =    9.50
  EFFECTIVE AREA(ACRES) =     47.77   AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.75  AREA-AVERAGED Ap =  0.49
  TOTAL AREA(ACRES) =     47.77       PEAK FLOW RATE(CFS) =      54.18

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

****************************************************************************
  FLOW PROCESS FROM NODE LR021466.0 TO NODE LR021467.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
```



```
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1187.00  DOWNSTREAM(FEET) =   1170.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1180.01   CHANNEL SLOPE =  0.0144
  CHANNEL BASE(FEET) =    2.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   4.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     54.18
  FLOW VELOCITY(FEET/SEC.) =   9.74   FLOW DEPTH(FEET) =   1.24
  TRAVEL TIME(MIN.) =   2.02   Tc(MIN.) =  20.41
  LONGEST FLOWPATH FROM NODE  21460.00 TO NODE  21467.00 =  4156.53 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021467.0 TO NODE LR021467.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  20.41
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.528
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"        B        7.62      0.75      0.50    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                  B        1.76      0.63      1.00    65
  COMMERCIAL                  B        2.13      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.15      0.75      0.60    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.71
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  SUBAREA AREA(ACRES) =   11.66      SUBAREA RUNOFF(CFS) =   12.27
  EFFECTIVE AREA(ACRES) =     59.43   AREA-AVERAGED Fm(INCH/HR) =  0.36
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.49
  TOTAL AREA(ACRES) =     59.43       PEAK FLOW RATE(CFS) =      62.21

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

****************************************************************************
  FLOW PROCESS FROM NODE LR021467.0 TO NODE LR021468.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1170.00  DOWNSTREAM(FEET) =   1156.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1415.51   CHANNEL SLOPE =  0.0099
  CHANNEL BASE(FEET) =    2.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   4.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     62.21
  FLOW VELOCITY(FEET/SEC.) =   8.73   FLOW DEPTH(FEET) =   1.45
  TRAVEL TIME(MIN.) =   2.70   Tc(MIN.) =  23.11
  LONGEST FLOWPATH FROM NODE  21460.00 TO NODE  21468.00 =  5572.04 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021468.0 TO NODE LR021468.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  23.11
```

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  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.418
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.73      0.75      0.10    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.64      0.75      0.60    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B       11.78      0.75      0.50    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        2.68      0.63      1.00    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.71
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.57
  SUBAREA AREA(ACRES) =   15.83      SUBAREA RUNOFF(CFS) =   14.41
  EFFECTIVE AREA(ACRES) =     75.26   AREA-AVERAGED Fm(INCH/HR) =  0.37
  AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.51
  TOTAL AREA(ACRES) =     75.26       PEAK FLOW RATE(CFS) =      70.75

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

****************************************************************************
  FLOW PROCESS FROM NODE LR021468.0 TO NODE LR021469.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1156.00  DOWNSTREAM(FEET) =   1117.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3195.53   CHANNEL SLOPE =  0.0122
  CHANNEL BASE(FEET) =    2.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   4.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     70.75
  FLOW VELOCITY(FEET/SEC.) =   9.77   FLOW DEPTH(FEET) =   1.47
  TRAVEL TIME(MIN.) =   5.45   Tc(MIN.) =  28.56
  LONGEST FLOWPATH FROM NODE  21460.00 TO NODE  21469.00 =  8767.57 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021469.0 TO NODE LR021469.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  28.56
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.249
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        8.14      0.75      0.10    56
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        7.28      0.63      1.00    65
  PUBLIC PARK                B        6.06      0.75      0.85    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        3.35      0.75      0.50    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.97      0.75      0.60    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.23      0.75      0.90    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.60
```



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  SUBAREA AREA(ACRES) =   26.03      SUBAREA RUNOFF(CFS) =   19.46
  EFFECTIVE AREA(ACRES) =    101.29   AREA-AVERAGED Fm(INCH/HR) =  0.39
  AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.53
  TOTAL AREA(ACRES) =    101.29       PEAK FLOW RATE(CFS) =      78.74

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

****************************************************************************
  FLOW PROCESS FROM NODE LR021469.0 TO NODE LR021469.0 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  28.56
  RAINFALL INTENSITY(INCH/HR) =   1.25
  AREA-AVERAGED Fm(INCH/HR) =  0.39
  AREA-AVERAGED Fp(INCH/HR) =  0.72
  AREA-AVERAGED Ap =  0.53
  EFFECTIVE STREAM AREA(ACRES) =   101.29
  TOTAL STREAM AREA(ACRES) =   101.29
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     78.74
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1      4101.54   72.30    14164.02  LR020120.0
     2        78.74   28.56      101.29  LR021460.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.81;3H= 1.39;6H= 1.97;24H= 3.95
  S-GRAPH: VALLEY(DEV.)= 77.5%;VALLEY(UNDEV.)/DESERT= 22.5%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 1.20; LAG(HR) = 0.96; Fm(INCH/HR) = 0.47; Ybar = 0.56
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.60; 30M = 0.62; 1HR = 0.63;
  3HR = 0.92; 6HR = 0.96; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  14265.31
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21469.00 = 55601.11 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0288; Lca/L=0.4,n=.0258; Lca/L=0.5,n=.0237;Lca/L=0.6,n=.0221
  TIME OF PEAK FLOW(HR) = 17.00  RUNOFF VOLUME(AF) =    2077.59
  PEAK FLOW RATE(CFS) =   4111.02

****************************************************************************
  FLOW PROCESS FROM NODE LR021469.0 TO NODE LR021470.0 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1117.00  DOWNSTREAM(FEET) =   1110.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   370.28   CHANNEL SLOPE =  0.0189
  CHANNEL BASE(FEET) =   22.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =  11.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   4111.02
  FLOW VELOCITY(FEET/SEC.) =  30.02   FLOW DEPTH(FEET) =   4.44
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  TRAVEL TIME(MIN.) =   0.21   Tc(MIN.) =  72.51
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21470.00 = 55971.39 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE LR021470.0 TO NODE LR021470.0 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN) =  72.51
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.714
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B       17.62      0.75      0.50    56
  COMMERCIAL                 B        0.37      0.75      0.10    56
  PUBLIC PARK                B        0.37      0.75      0.85    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.50
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA AREA(ACRES) =   18.36
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.30;30M= 0.61;1H= 0.81;3H= 1.39;6H= 1.97;24H= 3.94
  S-GRAPH: VALLEY(DEV.)= 77.5%;VALLEY(UNDEV.)/DESERT= 22.5%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 1.21; LAG(HR) = 0.97; Fm(INCH/HR) = 0.47; Ybar = 0.56
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.60; 30M = 0.62; 1HR = 0.63;
  3HR = 0.92; 6HR = 0.96; 24HR= 0.98
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =  14283.67
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  21470.00 = 55971.39 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0287; Lca/L=0.4,n=.0258; Lca/L=0.5,n=.0237;Lca/L=0.6,n=.0221
  TIME OF PEAK FLOW(HR) = 17.00  RUNOFF VOLUME(AF) =    2079.95
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   4109.87
  TOTAL AREA(ACRES) =  14283.67       PEAK FLOW RATE(CFS) =    4111.02
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.30; 30M = 0.61; 1HR = 0.80; 3HR = 1.29; 6HR = 1.74; 24HR = 3.12

****************************************************************************
  FLOW PROCESS FROM NODE LR021470.0 TO NODE LR021470.0 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 21470.dna
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =  14283.67  TC(MIN.) =     72.51
  AREA-AVERAGED Fm(INCH/HR)=  0.47   Ybar =  0.56
  PEAK FLOW RATE(CFS)   =   4111.02
============================================================================
============================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```